

Bureau of Fire Protection Response During Fire Incidents in the Fifth District of Pangasinan

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ABSTRACT

Philippines dedicated to protecting lives and properties from fire and related emergencies. This study evaluates the operational effectiveness and efficiency of the BFP in the Fifth District of Pangasinan in managing fire-related incidents. It also identifies critical challenges that affect the station's response capabilities. A mixed-method approach was used in the research, revealing that firefighting resources and responses are varied some are serviceable, others unserviceable or unavailable. The study recommends prioritizing the restoration and upgrading of unserviceable resources to improve readiness during emergencies.

Findings show a very satisfactory level of fire response, highlighting the commitment and dedication of the personnel in the Fifth District. Despite this, efficiency is hindered by several issues including limited personnel, delayed reporting and poor communication, traffic and narrow roads, insufficient rescue equipment, budget constraints, and weak community participation. Addressing these challenges requires a strategic approach enhancing recruitment and training, upgrading equipment, improving communication systems, coordinating with local authorities for traffic solutions, and promoting active community engagement. These measures aim to strengthen the overall firefighting capacity and ensure timely and effective emergency response across the district.

Keywords: Bureau of Fire Protection, Fire Response Efficiency, Operational Effectiveness, Emergency Management, Firefighting Resources

INTRODUCTION

Fire incidents remain one of the most destructive emergencies that threaten life, property, and community safety. In the Fifth District of Pangasinan, increasing population density, residential expansion, and commercial activities heighten the risk and impact of fire-related disasters. The Bureau of Fire Protection plays a crucial role in mitigating these risks through timely response, effective fire suppression, and coordinated emergency services.

Despite the importance of rapid and efficient fire response, challenges such as limited resources, traffic congestion, distance to incident sites, availability of equipment, and personnel readiness may affect the overall performance of the BFP during fire incidents. Understanding how these factors influence response time and operational effectiveness is essential in identifying gaps in current fire emergency management practices.

This study aims to assess the BFP's response during fire incidents in the Fifth District of Pangasinan by examining response time, manpower deployment, equipment adequacy, and coordination with other agencies. The findings of this research will provide valuable insights that can help improve fire response strategies, enhance preparedness, and support policy formulation and resource allocation.

Ultimately, the study seeks to contribute to the improvement of public safety, reduce fire-related losses, and strengthen the capacity of the Bureau of Fire Protection to effectively respond to fire incidents within the district.

LITERATURE REVIEW

Fire is a life-giving product of life. It plays a profound action in human beings used for protection in warmth, cooking, hunting, and agricultural purposes. In history, fire is the first element discovered by ancestors. One of

the most significant disadvantages of uncontrolled fire is the destruction of forests and habitats. According to a study by Müller et al. (2020), wildfires can lead to substantial deforestation, which disrupts ecosystems and threatens biodiversity. The loss of habitats affects flora and fauna and alters natural processes such as carbon storage and water regulation. Firefighters build momentous works around the community. They save lives and property through suppression and prevention of fire. Fire-related injuries and deaths are growing increasingly and need to be controlled (Asor et. al., 2021).

Moreover, building fires are believed to be a major threat to the safety of building occupants and are mostly caused by people's behavior. Smoking especially in bed, alcohol consumption, inappropriate use of and playing with fire by children, and dropping cigarette butts on the floor, were indicated in several studies. Studies shows that households with more smokers are at greater risk of fires. Other studies examined the association between smoking and fires-related injuries and death.

Several studies have focused on the link between simultaneous smoking and alcohol consumption with increased injuries and deaths caused by fires. Further, in large residential complexes with numerous residents, in particular, fires can lead to increased injury or death due to emergency evacuation difficulties. This issue has been confirmed in various studies. Hence, a study shows that buildings with less than two exits are more at risk of death from fires (Shokouhi et. al., 2019).

According to the United States Fire Department, there is a fire in a residential area every 85 seconds and these fires account for almost 80 percent of all fire-related deaths. Several studies have pointed out the relationship between building features and increased risk of fire-related injuries. The most important of these were high-rise buildings and buildings with substandard construction materials (National Broadcasting Company News, 2025).

Several studies have identified the relationship between the non-installation of smoke detectors with risk of injury and death. Many studies have examined the relationship between the presence of flammable materials and fires and increased risk of injury and death. In London, 78% of deaths from unintentional fires are related to fires in residential areas. Fire-related injuries are one of the major causes of death and disability. The unavailability of the fire service and safety training are also risk factors taken into consideration. Bad socio-economic status, rural agricultural areas, households with smokers and alcoholics were also considered. The relationship between employment status and the risk of house fires in two studies was investigated. Both these studies showed that families with unemployed members were more vulnerable to fires. Failure to properly monitor injuries from fires in the community was examined in one study and was found to increase the likelihood and severity of ensuing injuries (Shokouhi et.al., 2019).

In recent decades, even in high-income countries (HICs), despite the reduction in mortality rates, fire-caused deaths are still regarded as a major concern. Between 2007 and 2010, approximately 39% of fires in China occurred in residential areas. Different fire incidents in different building structures were also reviewed and the highest fire rates relative to population were found in Australia, Bulgaria and Israel. Asian region was identified as the second highest region with fire safety non-compliance and fire was identified as the second highest disaster topology in Sri Lanka.

Accordingly, factors affecting to the fire incidents in building were recognized through various real fires in building worldwide. Building design features, refurbishment practices, human behavior, fire regulation, policies and building codes, fire tools and techniques and perceptions of architects and fire protection engineers were evaluated as factors (Abeynayake & Rathnayake 2020). In Japan, maintaining Firefighting and Efficient Systems need to be created to protect resident, there are concern about the decline in the firefighting system systems of local government. Some small fire departments have not been able to respond to large scale disasters. Even when staffers picked up the phone and received requests for rescue, there were no firefighters available to be dispatched. This situation shows that with limited staff and equipment, personnel will not able to respond sufficiently (Longa & Perena, 2024). About 60% of the nations fire department serve populations of less than 100, 000 people. Population declines will likely it even harder to secure human resources and budgetary funding (The Yomiuri Shimbun, 2023).

Thus, considering the high possibility of death and injury and the financial losses incurred as a result of fires in residential buildings, more attention should be paid to this issue (Shokouhi et. al., 2019). The 2018 report of World Health Organization (WHO) regarding loss of life related to fire incidents shows that the Philippines ranks 11th out of 20 in the ranking of most death tolls caused by fire incidents with approximately 1000 fatalities

recorded. Physical discomfort and overexertion, crashes, objects being hit, and exposure to fire materials are the main causes of fire injury.

In Los Angeles California, braced for "extremely critical fire conditions" caused by a new period of Santa Ana winds through tomorrow across parts of Los Angeles and Ventura counties as the battle to contain the raging blazes goes on (National Broadcasting Company News, 2025). At least 25 people have died in the Los Angeles fires as two major blazes continue to burn across the sprawling US city. Destroyed more than 12,000 structures and charred more than 60 square miles. The largest by far — the Palisades and Eaton wildfires — continue to burn out of control (Baldwin, 2025). The overall destruction is immense, with more than 12,000 structures - homes, outbuildings, sheds, mobile homes and cars - destroyed. (FitzGerald, 2025).

According to the Los Angeles Department of Water and Power (LADWP) unprecedented and extreme water demand to fight the wildfires without aerial support due to the dearth of water pressure. Some hydrants in high elevations were affected, but the utility immediately deployed water tankers to back the firefighting efforts (Gibson, 2025). Additional water tankers and scores of firefighters arrived at the Los Angeles area ahead of fierce winds that were forecast to return and threaten the progress made so far on two massive infernos. Planes doused homes and hillsides with bright pink fire-retardant chemicals, while crews and fire engines were being placed near particularly vulnerable spots with dry brush. Dozens of water trucks rolled in to replenish supplies after hydrants ran dry when the two largest fires erupted (Watson & Seewer, 2025).

Furthermore, according to National Fire Protection Association (NFPA), winds don't necessarily cause wildfires, but wind-driven wildfire can happen just about anywhere. High winds exacerbate the risk because they add oxygen to the fire, which increases its intensity, and helps to move fire very rapidly through vegetation. They also loft embers for a mile or more ahead of the fire front.

In the Philippines especially in the National Capital Area, fire incidents have increased significantly over the years and are a major threat to the economy. According to the statistical results of Phil Star, throughout the year 2023, MANILA, Philippines, there were 15,900 fire occurrences in 2023; the Bureau of Fire Protection (BFP) has noted a 21.1 percent rise in fire events nationwide. This shows that fire outbreaks are one of the most destructive phenomena that happen within a year. In these situations, the skills and knowledge of the fire-fighters on how to deal with these situations at a given time with certainty of their abilities to control the fire from spreading (Urriza 2023). Their role has a significant impact in suppressing and preventing fires in the community and maintaining the safety and security of property and lives (Kumar & Paul, 2023). Research indicates that adherence to these standards significantly influences response times and overall effectiveness in emergency situations (Cruz, 2021).

The Bureau of Fire Protection operates under national standards set by the Department of the Interior and Local Government (DILG). These protocols dictate the operational procedures for fire response, including dispatch times, resource allocation, and the establishment of fire stations (DILG, 2020). Research indicates that adherence to these standards significantly influences response times and overall effectiveness in emergency situations (Cruz, 2021).

The Philippines is prone to fire incidents due to various factors, including urbanization, lack of fire safety awareness, and natural disasters such as typhoons. According to the Bureau of Fire Protection (BFP), the country has experienced a significant number of fire incidents annually, with thousands of cases reported. The BFP's annual reports provide a comprehensive overview of fire statistics, detailing the number of incidents, casualties, and property damage.

Fires spread rapidly due to adjoining homes in residential areas. In response to a series of significant fires in Manila, the Local Government Unit (LGU) has taken decisive action to enhance fire safety measures and educate residents about prevention strategies. Highlighting the critical need for public awareness, especially during the heightened fire risk period due to rising temperatures, Local Government Unit urged barangay leaders to educate residents about fire prevention and proper emergency response protocols. The mayor's initiative comes after several incidents where firefighters and volunteers faced challenges while responding to fires, emphasizing the importance of unimpeded firefighting operations. Additionally, affected families receive support and temporary shelter, underscoring the city's commitment to assisting during times of crisis (Resilient PH, 2024).

Fire incidents in the Philippines have been a growing concern in recent years, prompting various studies and reports aimed at understanding their frequency, causes, and impacts. Several studies have identified common causes of fire incidents in the Philippines. According to the BFP, electrical malfunctions, open flames, and negligence are among the leading causes.

A survey conducted by the Philippine Statistics Authority (PSA) revealed that around 45% of fire incidents are attributed to electrical issues, underscoring the need for improved electrical safety standards (PSA, 2021). Also, as stated by Asor et al., 2021, many factors that lead to fire-related incidents are triggered by electric wirings, unattended gas stoves, and the use of candles as a light source and smoking as the leading cause of fire incidents, followed by unattended open flames from cooking and electric ignitions (Caliwan, 2024). The country has seen a 25 percent increase in the number of fire incidents in the first two months of the year, most of which occurred in residential areas (Caliwan, 2024). There are equipment or safety measures that every firefighter must obtain for their safety, like personal protective equipment (PPE). Firefighters must help keep themselves safe from fires and protect themselves from heat, smoke, and hazardous materials. It has helmets, gloves, boots, and fireproof suits (Smith et al., 2020). Training gives the idea of how they will utilize and understand the correct usage and maintenance of their equipment, and it is also critical for firefighters to know what hazards their equipment cannot and will not shield them from (Khan et al., 2020).

Firefighters will be able to perform their duties more safely and effectively, preventing injuries and better safeguarding people and property by adhering to PPE regulations (Penney et al., 2022). When responding to fire situations, firefighters may encounter physical harm such as extreme heat, smoke intake, and the possibility of building collapse. They may also experience much psychological stress because of having to make tough choices and seeing traumatic events. Managing intricate construction designs and guaranteeing a sufficient water supply pose significant logistical obstacles (Lagata et al., 2022). Noise, construction materials, and the chaotic nature of fire scenes can all hinder effective communication, which is why it is so important. Their already difficult jobs are further complicated by handling hazardous items and making sure they stay safe while saving others (Florentin et al., 2022).

According to BFP spokesperson Fire Superintendent. Annalee Carbajal-Atienza said a total of 3,044 fire incidents were reported from Jan. 1 to March 1 of 2024, from 2,424 incidents logged in the same period last year in Manila. The key program, although it was launched in 2019, 'Oplan Ligtas na Pamayanan,' includes the dissemination of) EDITH – Emergency Drill In The Home because the incident is residential. The Philippine government has implemented various fire safety measures to mitigate the risks associated with fire incidents. The BFP has launched awareness campaigns aimed at educating the public about fire prevention and safety protocols. Moreover, local government units (LGUs) have been tasked with conducting regular fire drills and inspections to ensure compliance with safety regulations (BFP, 2023). Despite these efforts, challenges persist in achieving optimal community engagement. Research by Santos (2023) reveals that socio-economic factors, such as poverty and lack of access to information, hinder effective participation in fire safety programs.

Understanding these barriers is essential for the Bureau of Fire Protection to tailor its outreach initiatives effectively. Post-incident evaluations are critical for understanding the effectiveness of fire response measures. A comprehensive review by Mendoza (2023) emphasizes the importance of conducting thorough assessments after fire incidents to identify areas for improvement. The findings suggest that regular training and simulation exercises for BFP personnel can significantly enhance operational readiness.

Recent studies indicate a troubling trend in the frequency of fire incidents in the Philippines. According to the Bureau of Fire Protection (BFP), there has been a consistent increase in reported fire incidents over the past decade. A report by the Bureau of Fire Protection (2021) highlighted that the number of fire incidents rose by approximately 15% from 2019 to 2020, with urban areas experiencing higher incidences due to densely populated informal settlements.

Research by Ramos et al. (2022) noted that fire incidents tend to peak during the dry season, particularly between January and April. This is attributed to increased outdoor activities and the use of fire for cooking and other purposes without adequate safety measures. The study emphasizes the need for targeted fire prevention campaigns during these months. Several studies have identified human activities as a primary cause of fire incidents in the Philippines.

A comprehensive analysis by Mendoza (2020) found that most fires are attributed to negligence, particularly in residential areas where cooking and electrical faults are common. The study suggests that public awareness campaigns focusing on fire safety can significantly reduce these incidents. The Philippine government has implemented various policies and programs aimed at addressing fire incidents. The Fire Code of the Philippines (Republic Act No. 9514) mandates fire safety measures in buildings and establishments. Furthermore, the BFP has launched several fire safety campaigns to educate the public and promote fire prevention practices. Community involvement plays a crucial role in fire prevention and response. A study by Alonzo (2023) emphasized the importance of local fire brigades and community training programs in enhancing fire safety awareness. The research suggests that empowering communities to take proactive measures can lead to a significant reduction in fire incidents.

Moreover, the psychological burden of their job is something that firemen frequently deal with in addition to the logistical and physical difficulties. Firefighters who witness the aftermath of fires, including property destruction and even fatalities, may experience psychological discomfort and develop posttraumatic stress disorder (PTSD). Their mental health may suffer greatly from the ongoing exposure to terrible experiences and the pressure to perform well in difficult situations (Guilaran et al., 2021). Additionally, their personal life and relationships may be disrupted by long hours and erratic schedules, which can lead to emotional tiredness and burnout (Houton et al., (2022). Firefighters are committed to their work despite these obstacles, and they frequently turn to peer support, counseling, and resilience training to help them handle the pressures of their line of work (Conway & Waring, 2021). Bureau of Fire Protection Personnel in Sorsogon Province demonstrated much capabilities across all variables. Moreover, firefighters encounter challenges in emergency response, such as manpower shortages, lack of modern medical equipment and communication disruptions (Longa & Perena, 2024).

Pangasinan, a province in the Philippines, has experienced varying degrees of fire incidents due to its diverse urban and rural environments. According to the BFP Annual Report (2021), the province recorded a notable increase in fire incidents over the past decade, with urban areas facing higher frequencies due to population density and commercial activities. Several studies have identified key factors contributing to fire incidents in Pangasinan, including: Urbanization: Rapid urban growth has led to increased fire risks due to congested living conditions and inadequate fire safety measures (Dela Cruz, 2020). Climate Change: Changes in weather patterns have exacerbated fire risks, particularly in rural areas where agricultural burning is prevalent (Bautista, 2021). Research by Reyes (2022) highlights the importance of response time in mitigating fire damage.

The average response time reported for urban areas in Pangasinan was approximately 8-10 minutes, while rural areas faced delays of up to 15 minutes due to logistical challenges. Despite the progress made, the BFP in Pangasinan faces several challenges: Resource Limitations: Insufficient funding and equipment hinder the BFP's ability to respond effectively to large-scale fire incidents (Alvarez, 2023). Coordination Issues: Lack of coordination with local government units can lead to delays in response and resource allocation (Martinez, 2021).

The BFP has prioritized training programs for fire personnel to enhance their skills and readiness. A study by Santos (2023) found that well-trained firefighters were more effective in controlling fires and minimizing casualties, underscoring the need for continuous professional development. Community involvement is essential for effective fire prevention and response. Various initiatives, such as fire safety education campaigns, have been launched to raise awareness among residents. According to the findings of Villanueva (2022), communities that actively participated in fire drills and safety workshops reported lower incident rates.

The Bureau of Fire Protection (BFP) in the Philippines plays a critical role in safeguarding lives and properties from the devastating effects of fire incidents. The fifth district of Pangasinan, characterized by its unique socio-economic landscape, presents distinct challenges and opportunities for the BFP in executing its mandate. This review examines existing literature related to fire response strategies, community engagement, and the effectiveness of the BFP in the fifth district.

In the fifth district of Pangasinan, local adaptations of national protocols are essential. Studies highlight the importance of contextualizing response strategies to fit the geographical and socio-economic characteristics of the area (De Leon, 2022). Statistical records provide valuable insights into the frequency and nature of fire

incidents in the Fifth District. Research indicates that response time is a critical factor in determining the outcomes of fire incidents.

A study by Garcia et al. (2019) analyzed response times of the BFP in various regions, revealing that timely intervention significantly reduces property damage and casualties. In the Fifth District of Pangasinan, response times have been a point of concern, with local reports suggesting delays due to inadequate resources and manpower (Local Government Unit of Pangasinan, 2020). The Bureau of Fire Protection faces numerous challenges in responding to fire incidents, including limited equipment, insufficient personnel training, and geographic factors. A study by Reyes (2021) highlights that the Fifth District's varied terrain complicates access to certain areas, further exacerbating response times. Furthermore, the need for continuous training and capacity-building for BFP personnel has been emphasized to enhance their effectiveness during emergencies (BFP Annual Report, 2022).

According to the BFP's annual report for 2022, the district recorded a total of 150 fire incidents, with residential areas being the most affected (BFP, 2022). These statistics underscore the importance of targeted fire prevention strategies and community awareness programs. For instance, the presence of rural communities necessitates different logistical approaches compared to urban settings, influencing the BFP's operational readiness and response capabilities. Community involvement is crucial in fire prevention and response.

Literature indicates that effective fire safety education significantly reduces the incidence of fire-related emergencies (Garcia & Reyes, 2023). Studies show that areas with active community engagement in fire safety programs tend to experience fewer fire incidents (Cruz, 2020). The BFP has initiated various outreach programs in the Fifth District to educate residents about fire hazards and prevention measures, which have shown positive results in reducing the incidence of fires (Pangasinan Fire Safety Campaign, 2023).

In the fifth district, community-based programs led by the Bureau of Fire Protection aim to enhance public awareness regarding fire safety practices, thereby fostering a culture of preparedness. The efficiency of the BFP's response during fire incidents is often measured by response time and resource allocation. According to a study conducted by Villanueva (2024), the average response time in the fifth district is consistent with national averages; however, delays are noted in rural areas due to accessibility issues. This discrepancy highlights the need for improved infrastructure and resource distribution to enhance emergency response efforts.

In addition, in part of Urdaneta City, a massive fire broke out in a residential area in Barangay Poblacion, Urdaneta City, Pangasinan, destroying 13 homes and damaging three others (Torida, 2024). In the same municipality, a fire razed nine houses made of light materials in Barangay Mabanogbog in the year 2020. According to the investigation of the Bureau of Fire Protection of Urdaneta City Fire Station, this incident was the second alarm before it was declared fire out due to its light materials houses made up of sawali (bamboo strips) and it was the third residential fire recorded in the year 2020.

Meanwhile, in 2023, A raging fire consumed seven adjacent houses in Barangay Poblacion, Urdaneta City, Pangasinan evening. The majority of the houses were made of light materials, which was why the fire spread quickly (Simorio, 2023). The critical issue of negligence is the root cause of many fire incidents. Participants consistently emphasized how carelessness often involves everyday objects like phone chargers, electrical outlets, and cigarettes, leading to preventable fires. Whether it is leaving phone chargers unattended or smoking near combustible materials, these seemingly small actions can have devastating consequences (Amorcillo et. al., 2024). Analyzing fire incident statistics in Urdaneta City reveals trends that can inform future fire safety initiatives. Data from the BFP (2022) indicates that residential fires account for a significant portion of incidents, often attributed to electrical faults and improper handling of flammable materials.

A report by the Urdaneta City Disaster Risk Reduction and Management Office (2023) emphasizes the need for targeted community education programs to address these common causes. Despite the BFP's critical role, several challenges persist. Resource limitations, including insufficient firefighting equipment and personnel, can hinder timely responses (BFP Report, 2020). Moreover, geographical constraints in Urdaneta City, such as narrow streets and high population density, complicate access to fire scenes (Local Government of Urdaneta, 2023). A study by Villanueva (2024) found that areas with active community fire safety programs reported fewer incidents

and faster reporting times. Initiatives such as fire drills and educational workshops can empower residents and improve overall safety awareness, thereby aiding the BFP'

However, in Urdaneta City, response times can vary significantly due to infrastructural challenges and the distribution of fire stations (Urdaneta City Fire Station, 2023). Several factors influence the BFP's response effectiveness, including the availability of resources, training of personnel, and public awareness. According to Santos et al. (2022), limited funding and outdated equipment have hampered the BFP's ability to respond swiftly to fire incidents. Furthermore, inadequate training programs for firefighters can lead to inefficiencies during emergencies (BFP Annual Report, 2021).

Challenges encountered by firefighters during fire incidents in the town of Pangasinan are dealing not just with the possibility of more fires, but also with the problem of making do with fewer working fire hydrants. According to the Municipal Fire Marshal of Binmaley, Pangasinan, 2024 lacks personnel and is recruiting new firefighters, A few fire hydrants are replaced and stolen hydrants head. In addition, the Bureau of Fire Protection has insufficient firefighters and equipment and facilities, including fire trucks, fighting gear, and fire stations, according to the Commission on Audit.

Besides, a family of five died after hit their residence in Pozorrubio, Pangasinan on April 2023. The fire reached the second alarm and lasted for over two hours. The family trapped in the fire included the couple and their children aged six, three, and one (Lacanilao, 2023). An overcharged electric bike was the cause of a fire that killed a family of five according to an investigation of the Bureau of Fire Protection. Studies show that response time is a critical factor in minimizing damage during fire incidents.

A report by the National Disaster Risk Reduction and Management Council (NDRRMC) highlighted that rapid response teams could significantly reduce property loss and casualties (NDRRMC, 2021). In Pozorrubio, statistics indicate that response times have improved over the years, reflecting better training and resource allocation (BFP, 2022). Recent data from the BFP reveals a concerning trend in fire incidents within Pozorrubio. In 2023, there were a total of 35 recorded fire incidents, with residential areas accounting for 60% of these cases (BFP, 2023). The statistics underscore the need for enhanced fire prevention measures and community awareness programs. Analysis of the data indicates that the majority of fire incidents occur during the dry season, correlating with increased use of fire-related activities such as cooking and outdoor burning (BFP, 2023).

Moreover, the rise in incidents during festive seasons suggests a link between cultural practices and fire risks. The literature emphasizes the importance of community involvement in fire safety. Programs aimed at educating residents about fire prevention and emergency response have shown positive outcomes in reducing the incidence of fires (Cruz, 2020). The BFP has initiated several outreach programs in Pozorrubio, which have reportedly increased public awareness and preparedness (BFP, 2022).

This study focuses on firefighting response during fire incidents that assess the faces of firefighter's operational activities and programs toward community perspective. Improve the efficiency and effective of the implementation action for the overall success in personnel response, equipment, apparatus, rescue efforts, fire prevention, fire suppression, and fire control.

THEORETICAL/CONCEPTUAL FRAMEWORK

This study is grounded in relevant theories and a conceptual foundation for understanding responding to fire incidents. The framework not only guides the formulation of research questions but also informs the interpretation of findings within a broader theoretical context. Furthermore, this study builds on existing research by applying it to explore thereby contributing to the ongoing discourse.

The fire triangle, also known as the combustion triangle, is a fundamental concept in fire science and safety. It explains the three key elements required for a fire to ignite and sustain itself: heat, fuel, and oxygen. Fuel composes of any combustible material that can burn, such as wood, paper, fabric, gasoline, or propane. Heat is the energy needed to increase the temperature of the fuel to its ignition point. Oxygen is the element that sustains a fire to continue a chemical reaction, producing heat and flames in the process (Firefree, 2023). These elements

must be present in the right proportions for a fire to occur. Removing any of these elements can extinguish the fire (Safety Education, 2024).

Besides, according to the admin of Fighters 2023, to prevent fires, it can focus on eliminating or controlling one or more of the components of the fire triangle: eliminate heat sources by turning off appliances when not in use, maintaining electrical wiring, and avoiding open flames in hazardous areas; by removing or limiting fuel, it can reduce the potential for fire. This involves proper storage of flammable materials, regular cleaning to remove combustible debris, and careful disposal of smoking materials; and controlling oxygen supply can also be effective, as seen in fire suppression techniques that involve flooding a fire with water or foam to displace oxygen. A safety diagram of the fire triangle can help people understand the conditions that lead to blazes (Firefree, 2023).

Understanding the dynamics of the fire triangle is essential for safety and prevention strategies in your personal and professional life (Firefree, 2023).

According to Republic Act 6975, the BFP was created by virtue of RA 6975 primarily to perform the following functions: responsible for the prevention and suppression of all destructive fires on: Building, houses and other structures; Forest; Land transportation vehicles and equipment; Ships and vessels docked at piers or wharves anchored in major sea ports; Petroleum industry installations; Plane crashes; and Other similar activities

Be responsible for the enforcement of the Fire Code of the Philippines (PD 1185) and other related laws; Shall have the power to investigate all causes of fires and if necessary, file the proper complaint with the city or provincial prosecutor who has jurisdiction over the case; In the time of national emergency, all elements of the BFP shall upon the direction of the President, assist the AFP in meeting the national emergency; and Shall establish at least one (1) fire station with adequate personnel, firefighting facilities and equipment in every city subject to standards, rules, and regulations as may be promulgated by the Department of the Interior and Local Government (DILG).

Hence, the BFP shall be responsible for the prevention and suppression of all destructive fires on buildings, houses and other structures, forests, land transportation vehicles, and equipment, ships or vessels docked at piers or wharves or anchored in major seaports, petroleum industry installations, plane crashes, and other similar incidents, as well as the enforcement of the Fire Code and other related laws.

According to the RA 9514 also known as the Fire Code of the Philippines, Revised Implementing Rules and Regulations (2019)". It is the policy of the State to ensure public safety and promote economic development through the prevention and suppression of all kinds of destructive fires and promote the professionalization of the fire service as a profession. Towards this end, the State shall enforce all laws, rules and regulations to ensure adherence to standard fire prevention and safety measures, and promote accountability for fire safety in the fire protection service and prevention service.

Every building or structure new or old, designed for human occupancy shall be provided with exits sufficient to permit the fast and safe escape of occupants in the case of fire or other emergencies. Every escape of buildings or structures shall be arranged and maintained to provide free and unobstructed egress from all parts thereof at all times. Every exit shall be clearly and visible (RA 9514, Rule 10). As may be defined and provided in the Rules and Regulations, owners, administrators or occupants of buildings, structures, and their premises or facilities and other responsible persons shall be required to comply as may be appropriate in inspection requirement including a fire safety inspection shall be conducted by the Chief, BFP or his duly authorized representative as a prerequisite to the grants of permits and/or licenses by local governments and other government agencies concerned.

This law is known as the "Bureau of Fire Protection Modernization Act" states that public safety through fire prevention and suppression is supported by community cooperation. This act was signed by former president Rodrigo R. Duterte on September 10, 2021. The Bureau of Fire Protection has been instrumental in the success of our collective efforts to provide rescue and relief operations in areas hit by destructive fire and calamities (Duterte, 2021). It is the policy of the State to ensure public safety through the prevention and suppression of all kinds of destructive fires, with the active support of the community.

Towards this end, the State shall formulate and implement plans and programs to enhance and modernize the Bureau of Fire Protection, expand its mandate and capability, and ensure its responsiveness to the changing needs of the community (Sec. 2). Prevent and suppress all destructive fires on buildings, houses and other structures, including those that occur in economic zones, agro-industrial economic zones, free ports, and special economic zones, Information Technology (IT) parks and centers, tourism economic zones, and other similar entities; forests; land transportation vehicles and equipment; ships or vessels docked at piers or wharves or anchored in major seaports, petroleum industry installations; and airports, in the event of plane crashes and other similar incidents: Provided,

That the BFP shall collaborate with various local government units (LGUs) on fire protection services, such as fire prevention and preparedness, response planning, and information sharing, as well as on handling fire management and operational issues. (Sec. 3a). Conduct training of its personnel and officers including fire volunteers, fire safety practitioners and fire volunteer organizations, pertaining to fire prevention and suppression, fire inspection and clearance, investigation, disaster preparedness, rescue, emergency medical response, HAZMAT, CBRNE, and other operations: Conduct monthly fire prevention campaigns and information drives in partnership with the LGUs, the DILG, the Department of Transportation, and economic zones (Sec.3i). Develop, promote, and implement a comprehensive fire safety and protection program that aims to strengthen the capacity of the national government and LGUs, to build the fire resilience of communities, and institutionalize measures for reducing disaster risk, and enhancing disaster and emergency preparedness and response capabilities. The BFP shall also empower existing community-based fire volunteer brigades and encourage the creation of the same in all LGUs (Sec 3j).

Figure 1 presents the paradigm of the study. The conceptual paradigm of the study used the Input, Process and Output. The Input of this study is to determine the Status of firefighting resources and the response in the fifth district of Pangasinan Fire Station in terms of: Equipment, tools, accessories; and Apparatus. The level of satisfaction with the firefighting resources and response of the Bureau of Fire Protection in the fifth district of Pangasinan fire station. Challenges that affect the efficiency of firefighting resources and the response of Bureau of Fire Protection in the fifth district of Pangasinan Fire Station. The process is the administration of questionnaire and interview guide. The output is the Proposed a measure to enhance the efficiency of firefighting resources and response of Bureau of Fire Protection in the fifth district of Pangasinan Fire Station.

Significance of the Study

This study aims to strengthen fire response operations in the Fifth District of Pangasinan, contributing to the overall safety and well-being of its communities. The findings of this study will provide valuable insights into the efficiency of the BFP during fire incidents.

Department of Interior and Local Government. This study will give well- substantiated information for the benefit of BFP in the fifth district of Pangasinan in terms of equipment, tools, accessories, and apparatus for the effectiveness of fire prevention and suppression.

Bureau of Fire Protection. The findings of the study can highlight which duties are performed effectively and which areas need improvement, helping streamline

emergency response protocols. Results may inform the development of more targeted and practical training modules for firefighters, especially in handling pre-, during, and post-fire scenarios. BFP leaders can use this research to support policy changes, resource allocation, and strategic planning grounded in actual field performance.

Local Government Unit. This study will give them a guide to evaluate fire response in local activities. It helps to discover novel insight for fire prevention and suppression.

Community. The result of the study will create a bond of awareness for the people for fire suppression, prevention, and control.

Researcher. Gain deeper insight into fire response operations and community safety protocols. This enriches academic background, strengthens my research competencies, and allows me to contribute meaningfully to both public service and professional development in emergency response.

Future Researcher. This study will appraise future researchers for their related data and discussion. It may also use in reference for future studies.

Objectives of the Study

This study aims to assess the effectiveness and efficiency of the BFP in the fifth district of Pangasinan in responding to fire incidents in the municipality as well as identify the issues and challenges that affect their performance.

Specifically, it sought to answer the following questions:

1. What is the status of firefighting resources and response of Bureau of Fire Protection in the fifth district of Pangasinan in terms of:

1.1 Equipment, tools, accessories; and

1.2 Apparatus?

2. What is the level of satisfaction with the firefighting resources and response of the Bureau of Fire Protection in the fifth district of Pangasinan?

3. What are the challenges that affect the efficiency of firefighting resources and response of the Bureau of Fire Protection in the fifth district of Pangasinan?

4. What measures can be proposed to enhance the efficiency of firefighting resources and response of the Bureau of Fire Protection in the fifth district of Pangasinan?

METHODOLOGY

Study Design

This study made use of mixed methods. The mixed-method approach **represented** research that **involved** collecting, analyzing, and interpreting qualitative and quantitative data in a single study or in a series of studies that **investigated** the same underlying phenomenon (Cameron, 2015).

Descriptive-quantitative methods **were used** to determine the status of firefighting resources and the response of the Bureau of Fire Protection in the Fifth District of Pangasinan, and the level of satisfaction with the firefighting resources and response of the Bureau of Fire Protection in the Fifth District of Pangasinan. Descriptive research, as defined by McCombes (2019), **accurately and systematically described** a population situation or phenomenon. Descriptive research design **used** a wide variety of research methods to analyze variables.

Similarly, narrative analysis, a qualitative method **used** to determine the challenges that **affected** the efficiency of firefighting resources and responses of the Bureau of Fire Protection in the Fifth District of Pangasinan. Narrative analysis **was used** to understand how individuals **created** stories from their personal experiences. There **was** an emphasis on understanding the context in which a narrative **was** constructed, recognizing the influence of historical, cultural, and social factors on storytelling (McLeod, 2024).

Population and Locale of the Study

The study was conducted in the Fifth District of Pangasinan, which includes the municipalities of Binalonan, Pozorrubio, Urdaneta City, Laoac, and Villasis. These municipalities were selected due to documented fire incidents from 2022 to 2024 and the active engagement of local fire response units.

The total sample size consisted of sixty-seven (67) respondents. These were composed of twenty-two (22) BFP personnel, eighteen (18) Local Government Unit (LGU) responders, and twenty-seven (27) barangay officials.

The BFP personnel included fire officers, drivers, and emergency medical responders directly involved in firefighting and rescue operations. The LGU responders consisted of personnel from the Office of the Mayor, Engineering Department, Municipal Disaster Risk Reduction and Management Office (MDRRMO), health workers, and other officials assisting in fire response and recovery. Barangay officials included barangay captains and kagawads from the top three barangays with the highest number of recorded fire incidents during the study period.

Purposive sampling was employed in selecting respondents. This sampling method was chosen because the study required participants who possessed direct experience, technical knowledge, and involvement in fire response operations. The sample size was determined based on the total number of qualified and active personnel within the selected municipalities who met the inclusion criteria. In certain categories, total enumeration of eligible participants was applied to ensure adequate representation of key stakeholders directly involved in operational response.

Data Gathering Tools

In order to obtain the desired data from BFP Personnel, Local Government Unit and Barangay officials in the fifth district of Pangasinan, the researcher used survey questionnaires and an interview guide as the major instruments. Survey questionnaires were used in problems number one and two; furthermore, an interview guide was utilized in problem number 3. Survey questionnaires and interview guide was translated by Ma'am Marynesa Benito, a Filipino Major teacher. Random probing questions were added for open-ended subjective responses to the respondent during the interview for further clarification.

The validity of research instruments such as questionnaires and interview guides is paramount in ensuring that the data collected accurately reflects the constructs being studied. To ensure that the questionnaire and interview guide effectively measures the intended constructs, a comprehensive validity assessment of the survey questionnaire and interview guide were validated by the City Fire Marshal of Urduyeta City, Pangasinan, Municipal Fire Marshal of Binalonan, Pangasinan, and the Dean of Criminal Justice Education in the University of Eastern Pangasinan. The result of the validation questionnaire was 4.00.

Data Gathering Procedure

Prior to data collection, the researcher submitted formal letters requesting permission from the concerned authorities of the Bureau of Fire Protection and Local Government Units. Upon approval, respondents were identified based on established inclusion criteria.

Informed consent was obtained from all participants before administering the instruments. The structured questionnaires were personally distributed to LGU responders and barangay officials and collected after completion. Semi-structured interviews were conducted with selected BFP personnel and other key informants at scheduled times convenient for them. Interviews were documented through detailed note-taking and transcription to ensure accuracy.

After data collection, quantitative responses were coded, tallied, and tabulated according to frequency distribution. Weighted mean computations were used to determine levels of satisfaction. Qualitative data were transcribed, organized, and analyzed thematically to identify recurring patterns, operational challenges, and recommendations.

Treatment of Data

Frequency count was used to determine the status of firefighting resources and response in the fifth district of Pangasinan. The weighted mean was used to determine the level of satisfaction with the firefighting resources and response in the fifth district of Pangasinan.

Categorization of data

The descriptive equivalent rating and the range of values presented below on the level of satisfaction on the firefighting resources and response in the fifth district of Pangasinan station.

In problem number three, the researcher used thematic analysis. Present narrative presentation discussing issues and challenges that affect the efficiency of firefighting resources and response of the BFP in the fifth district of

Pangasinan Fire Station. The researcher documents and analyzes the gathered data from the audio recorder device, documentation, and informal and formal interviews.

Ethical Considerations

Before the study was conducted, the respondents were **briefed on key information** about the purpose, scope, and significance of the study. They were **informed of their right to voluntarily participate** and their consent was obtained prior to data collection. The study adhered to Republic Act No. 10173, the “Data Privacy Act of 2012,” ensuring **anonymity, confidentiality, and protection of personal information**. All data gathered were handled carefully to ensure that it **would not potentially harm the respondents** in any way.

To respect the respondents, the researcher **greeted each participant politely** and created a **comfortable and professional environment** during data collection. An **informed consent letter** was provided, clearly explaining the purpose of the study, the respondent’s rights, confidentiality measures, and their freedom to withdraw at any time without consequence. The researcher **ensured that respondents fully understood the questions** in the survey and interview guide and **allowed them sufficient time** to write their answers in the interview guide without pressure.

Respondents were **assured that their input was valuable** and would contribute to improving fire response operations. At the conclusion of the data collection, the researcher **expressed gratitude** for their time, cooperation, and honest participation. Additionally, the researcher **avoided any form of coercion or influence** that might bias their responses, and **treated all respondents with respect, fairness, and professionalism** throughout the study.

RESULTS AND DISCUSSIONS

The BFP, as the primary agency responsible for fire suppression in the Philippines, plays a pivotal role in these efforts, necessitating continuous evaluation of its response capabilities.

The status of Firefighting Resources and Response of the Bureau of Fire Protection in the Fifth District of Pangasinan Fire Station.

The effective management and deployment of firefighting resources are critical components in the prevention, containment, and suppression of fires. As urbanization and industrialization accelerate, the complexity and scale of fire emergencies increase, necessitating a comprehensive understanding of firefighting resources and their optimal utilization. The introduction and development of firefighting resources are integral to effective fire management. Technological innovations and strategic planning have significantly enhanced firefighting capabilities, yet ongoing challenges necessitate continuous improvement and adaptation. Future advancements promise to further optimize resource utilization, ultimately saving lives and property.

The results of the study indicate that all eighteen (18) identified firefighting resources namely fire coat, fire nozzle (1.5), hose (1.5), hose (2.5), fire trouser, fire boots, fire gloves, helmet, boots, complete PPE, SCBA, handheld radio, fire axe, bolt cutter, crow bar, extension ladder, pike pole, and road safety cone were assessed as 100% serviceable in the Fifth District of Pangasinan. This finding reflects a high level of operational readiness and effective resource management across the fire stations in the district. The full serviceability of these essential equipment, tools, and protective gear implies that firefighters are adequately equipped to conduct suppression, rescue, ventilation, communication, and scene control operations safely and efficiently. The availability and proper condition of both personal protective equipment and operational tools demonstrate compliance with established safety standards and maintenance protocols, which are critical in minimizing risks during emergency responses.

The implications of these findings are substantial for firefighter safety, response efficiency, and community protection. The complete serviceability of PPE components such as fire coats, trousers, gloves, helmets, boots, and SCBA enhances protection against thermal, respiratory, and mechanical hazards, thereby reducing the likelihood of injuries and fatalities during fire operations. Likewise, the readiness of suppression and support

equipment including hoses, nozzles, ladders, forcible entry tools, communication devices, and traffic control equipment contributes to faster response times, improved coordination, and effective fireground management. This level of preparedness fosters firefighter confidence, supports sustained operational performance, and strengthens public trust in the fire service's ability to respond to emergencies. Moreover, the findings suggest that the district has implemented effective preventive maintenance practices, regular inspections, and proper inventory control, which are essential for sustaining long-term equipment reliability.

Smith et al. (2020) and Smith and Jones (2020) highlighted that well-maintained PPE and firefighting tools significantly reduce injury rates and enhance operational efficiency. Studies by Liu et al. (2020) and the International Association of Fire Fighters (IAFF, 2017) further underscore the critical role of functional SCBA and protective gear in improving firefighter survivability in hazardous environments. Additionally, standards and guidelines from the National Fire Protection Association (NFPA, 2018; 2019; 2021) and OSHA (2021) stress that regular inspection, maintenance, and availability of firefighting equipment are essential to preventing operational failures and ensuring safe emergency response. Collectively, these studies support the findings of the present research, affirming that the 100% serviceability of the eighteen firefighting resources in the Fifth

As indicated in the table above, the findings of the study reveal that five (5) critical firefighting resources namely the electric smoke ejector, knot-passing pulley, dead blow hammer, extrication ladder, and single sheave pulley were assessed as 100% non-available in the Fifth District of Pangasinan. This result indicates gaps in the availability of specialized and technical firefighting equipment within the district. While these tools may not be required in all routine fire suppression activities, their absence suggests limitations in the district's capacity to effectively manage complex fireground situations, particularly those involving ventilation, technical rescue, confined space operations, and extrication scenarios.

The implications of the non-availability of these resources are significant for operational capability, firefighter safety, and emergency response outcomes. The absence of an electric smoke ejector may hinder effective ventilation during structural fires, potentially prolonging exposure to heat and toxic smoke. Similarly, the lack of knot-passing pulleys and single sheave pulleys limits the district's ability to perform rope-based rescue operations and manage elevated or confined rescue scenarios safely. The unavailability of a dead blow hammer may affect forcible entry and controlled impact operations, while the absence of an extrication ladder may restrict access and rescue capabilities in vehicular accidents or elevated rescue situations. Collectively, these deficiencies may increase response time, operational risk, and reliance on improvised methods or external assistance, underscoring the need for targeted procurement, equipment prioritization, and strategic resource planning.

These findings are corroborated by existing literature, which emphasizes the importance of specialized firefighting and rescue equipment in enhancing operational effectiveness and responder safety. According to the National Fire Protection Association (NFPA, 2021), ventilation tools such as smoke ejectors are essential for improving interior conditions and reducing fireground hazards. Studies by Arnilla et al. (2019) and the International Association of Fire Chiefs (IAFC, 2020) highlight that the availability of technical rescue tools, including pulleys and ladders, is crucial for safe and efficient rescue operations in complex environments. Furthermore, research by Smith and Taylor (2019) underscores that the absence of appropriate forcible entry and impact tools can delay rescue efforts and increase firefighter exposure to hazards. These studies support the present findings, reinforcing that while the Fifth District of Pangasinan demonstrates strong serviceability in core firefighting resources, addressing the absence of specialized equipment is essential to achieving comprehensive operational readiness and enhancing overall emergency response capability.

As observed from table above, the results indicate that selected firefighting resources specifically the fire nozzle (2.5), fire pump, hard hat, SCBA with extra cylinder, and hydraulic jack were assessed as 82% serviceable and 18% non-available in the Fifth District of Pangasinan. This finding suggests that while the majority of these essential firefighting and rescue resources are functional and accessible, a notable portion remains unavailable, reflecting partial gaps in equipment distribution and availability. The predominance of serviceable equipment indicates that the district maintains a generally adequate level of operational readiness; however, the presence of non-available units highlights inconsistencies in resource allocation that may affect response capability in certain emergency situations.

The implications of this mixed level of availability are significant for firefighting effectiveness, firefighter safety, and emergency preparedness. Serviceable fire nozzles and fire pumps are crucial for sustained water delivery during suppression operations, while hard hats provide basic head protection during rescue and support activities. Likewise, the availability of SCBA units with extra cylinders directly affects the duration and safety of interior firefighting and rescue operations, particularly in smoke-filled or oxygen-deficient environments. The partial non-availability of these resources may limit operational flexibility, increase firefighter fatigue, and necessitate rotation or reliance on external support during prolonged incidents. Additionally, the limited availability of hydraulic jacks may hinder rescue operations involving vehicle extrication or structural stabilization, potentially delaying victim access and increasing risk during technical rescue scenarios. These findings underscore the need for improved inventory management, strategic procurement, and equitable distribution of critical firefighting resources across the district.

According to the National Fire Protection Association (NFPA, 2019; 2021), adequate quantities of functional suppression, breathing, and rescue equipment are essential to maintaining firefighter safety and operational efficiency. Studies by Liu et al. (2020) highlight that limited access to SCBA units and spare air cylinders can significantly reduce operational endurance and increase exposure to hazardous conditions. Similarly, research by Smith and Johnson (2020) underscores that inconsistent availability of suppression and rescue equipment, such as fire pumps and hydraulic tools, may compromise response effectiveness and delay critical interventions.

As evidenced by the table above, the findings reveal that selected firefighting and rescue resources specifically the hydraulic steel bar, generator set, chipping hammer, PPE rack locker, and rescue-8 descender were assessed as 23% serviceable and 77% non-available in the Fifth District of Pangasinan. This result indicates a substantial gap in the availability of specialized, support, and rescue-related equipment within the district. The low level of serviceability suggests that while limited units may be operational, the majority of these resources are either unavailable or insufficiently distributed across fire stations, which may constrain the district's capacity to perform certain technical, logistical, and rescue functions effectively.

The implications of this finding are considerable for operational readiness, firefighter safety, and emergency response effectiveness. The limited availability of hydraulic steel bars and chipping hammers may reduce the effectiveness of forcible entry and overhaul operations, particularly in structurally compromised environments. The absence of generator sets can affect night operations, scene illumination, and the functionality of electrically powered equipment during power outages. Furthermore, the lack of PPE rack lockers may compromise proper storage and maintenance of protective gear, potentially accelerating equipment deterioration and affecting readiness. The non-availability of rescue-8 descenders significantly limits rope-based rescue capabilities, increasing operational risk during high-angle or confined space rescue scenarios. Collectively, these limitations may lead to delayed response, increased reliance on improvised methods, and heightened exposure of firefighters to hazards, underscoring the urgent need for equipment acquisition, improved logistical support, and strategic resource planning.

According to the National Fire Protection Association (NFPA, 2021), the availability of forcible entry, power supply, and technical rescue equipment is essential to maintaining operational safety and efficiency. Studies by the International Association of Fire Chiefs (IAFC, 2020) highlight that inadequate access to rope rescue devices and support systems significantly increases the risk of firefighter injury and operational failure. Additionally, research by Smith and Taylor (2019) underscores that proper storage and maintenance infrastructure, such as PPE lockers, is vital for preserving equipment integrity and ensuring rapid deployment. These studies support the present findings, indicating that the high level of non-availability among these resources represents a critical area for improvement in order to strengthen the overall firefighting and rescue capability of the Fifth District of Pangasinan.

Based on the data in the table above, the findings indicate that selected firefighting resources namely the chainsaw, PPE rack, and reducer were assessed as 73% serviceable and 27% non-available in the Fifth District of Pangasinan. This result suggests that the majority of these resources are functional and accessible; however, a notable portion remains unavailable, reflecting partial limitations in equipment distribution and availability. The predominance of serviceable units indicates a generally acceptable level of operational readiness, yet the

presence of non-available resources may affect the consistency and efficiency of firefighting and rescue operations across the district.

The availability of chainsaws is essential for ventilation, debris removal, and access during rescue operations, particularly in structural fires and disaster response scenarios. PPE racks play a critical role in the proper storage, organization, and readiness of personal protective equipment, while reducers are vital for ensuring compatibility between hoses and water supply systems. The partial non-availability of these resources may lead to delays in deployment, improper storage of PPE, or limitations in water delivery configurations, potentially affecting response efficiency and firefighter safety. These findings highlight the need for improved inventory control, equitable equipment distribution, and regular monitoring to ensure consistent availability across all fire stations.

According to the National Fire Protection Association (NFPA, 2021), ventilation tools, water flow accessories, and proper PPE storage systems are integral to safe and effective fireground operations. Studies by Smith and Taylor (2019) also indicate that the availability of chainsaws and related equipment significantly enhances rescue and ventilation efficiency, while inadequate PPE storage can contribute to equipment degradation and delayed response. Furthermore, research by Johnson and Lee (2020) underscores that proper hose fittings, such as reducers, are essential for maintaining optimal water flow and pressure during suppression activities. These studies support the present findings, reinforcing that while the Fifth District of Pangasinan demonstrates reasonable preparedness in these resources, addressing the remaining gaps in availability is necessary to achieve more consistent and comprehensive operational readiness.

According to the table above, the assessment showing 55% serviceability and 45% non-availability of basket stretchers, search and rescue helmets, and carabiners highlights a critical area for improvement in the Fifth District of Pangasinan's rescue preparedness. While the presence of serviceable units demonstrates some capacity for technical rescue operations, the substantial proportion of non-available equipment suggests vulnerabilities in emergency response, particularly in incidents requiring safe victim handling and high-angle or confined space rescue techniques. This condition underscores the need for strengthened procurement strategies, standardized equipment allocation, and enhanced logistical planning to ensure equitable access to essential rescue tools.

The importance of these resources is well documented in the literature. NFPA (2021) and IAFC (2020) emphasize that rescue equipment such as basket stretchers and carabiners is indispensable for minimizing injury risk and ensuring efficient victim evacuation. Research by Johnson and Lee (2020) further supports that adequate rescue equipment availability directly contributes to improved rescue outcomes and responder safety, reinforcing the urgency of addressing the identified equipment gaps.

As derived from the table above, the data indicate that only 14% of the rotary rescue saws, SCBA refilling systems, and motor pool equipment were serviceable, while 86% were non-available, reflecting a severe deficiency in specialized operational resources within the Fifth District of Pangasinan. This imbalance suggests that most fire stations lack access to critical tools required for advanced rescue, extended fire suppression, and logistical support.

This condition may negatively affect operational endurance, firefighter safety, and response effectiveness, particularly during large-scale or prolonged incidents. These findings align with NFPA (2021) and IAFC (2020), which emphasize that the absence of rescue saws, air management systems, and reliable vehicle support infrastructure can significantly compromise firefighting performance and emergency response outcomes.

The results indicate that the rescue rappelling gloves, rescue wrench, and rescue 8 ring were assessed as 45% serviceable and 55% non-available in the Fifth District of Pangasinan. This finding suggests that more than half of these specialized rescue tools are unavailable, reflecting limited readiness in rope-based and technical rescue operations. While the presence of some serviceable units indicates partial operational capability, the overall level of non-availability may constrain the district's ability to conduct safe and efficient rappelling, high-angle rescue, and technical extrication activities.

This finding aligns with NFPA (2021) and IAFC (2020), which underscore that incomplete rope rescue equipment sets reduce operational efficiency and increase risk during high-angle and technical rescue

incidents. According to the National Fire Protection Association (NFPA, 2021), the availability of appropriate rope rescue hardware and personal protective equipment is essential to ensuring rescuer safety and operational control. Studies by the International Association of Fire Chiefs (IAFC, 2020) further emphasize that deficiencies in technical rescue tools can significantly increase the likelihood of injury and operational failure, supporting the conclusions of the present study.

The findings show that the axe bracket and rain boots were assessed as 77% serviceable and 23% non-available in the Fifth District of Pangasinan. This result indicates a generally high level of availability for these support and protective resources, suggesting that most fire stations are adequately equipped to secure essential tools and provide basic environmental protection for firefighters. The predominance of serviceable equipment reflects effective maintenance practices and resource allocation within the district.

Axe brackets ensure proper storage and secure mounting of fire axes on fire apparatus, preventing tool damage and allowing quick access during emergencies. Rain boots provide protection against wet, muddy, and slippery conditions, which are common during firefighting, rescue, and disaster response operations. However, the partial non-availability of these items may result in inconsistent tool accessibility and reduced protection for some firefighters, highlighting the need for improved distribution to ensure uniform readiness across all stations.

This interpretation is supported by literature from NFPA (2021) and Smith et al. (2020), which emphasize that proper storage systems and protective footwear play a critical role in reducing operational risks and improving response efficiency. According to the National Fire Protection Association (NFPA, 2021), secure tool mounting systems enhance safety and efficiency during emergency response. Studies by Smith et al. (2020) further indicate that appropriate protective footwear reduces slip-related injuries and improves firefighter mobility in adverse conditions. These sources support the present findings and affirm the value of maintaining high serviceability levels for support equipment.

The data show that 50% of kernmantle ropes and pulleys were serviceable, while the remaining 50% were non-available, indicating uneven distribution of rope rescue equipment within the Fifth District of Pangasinan. This condition suggests limited and inconsistent capacity to conduct technical rescue operations.

The equal proportion of serviceable and non-available kernmantle ropes and pulleys highlights a critical area for improvement in the Fifth District of Pangasinan's rescue preparedness. Rope rescue operations rely heavily on these components for safety, control, and efficiency; thus, their partial absence may compromise both rescuer and victim safety. Addressing this gap through improved procurement, standardized distribution, and regular inspection is essential to strengthening the district's technical rescue capability.

The importance of these resources is supported by NFPA (2021) and IAFC (2020), which underscore that properly maintained rope rescue systems are fundamental to modern firefighting and rescue operations. According to the National Fire Protection Association (NFPA, 2021), adequate availability of ropes and pulleys is essential to ensure rescuer safety and effective victim handling during technical rescue operations. Studies by the International Association of Fire Chiefs (IAFC, 2020) further indicate that incomplete rope rescue equipment sets can increase operational risk and reduce rescue efficiency. These sources support the conclusions of the present study and underscore the importance of addressing equipment gaps to enhance overall firefighting and rescue readiness.

The findings indicate that the fireman's hood and responder kit were assessed as 59% serviceable and 41% non-available in the Fifth District of Pangasinan. This result suggests a moderate level of availability of these essential protective and response resources, reflecting partial readiness across the fire stations in the district. While more than half of the units are functional and accessible, the remaining non-available resources indicate gaps that may affect consistent protection and initial response capability during emergency operations.

The implications of these findings are important for firefighter safety and operational effectiveness. The fireman's hood provides critical thermal and particulate protection to the head, neck, and facial areas, reducing exposure to heat and contaminants during fire suppression. The responder kit, which typically contains essential medical and emergency response tools, supports immediate life-saving interventions during fire and rescue incidents. The partial non-availability of these resources may increase vulnerability to burn injuries, smoke

exposure, and delayed first aid response, underscoring the need for improved distribution, regular inspection, and inventory management to ensure full readiness.

This finding is consistent with NFPA (2021) guidelines, which stress the necessity of complete PPE and readily accessible responder kits to ensure firefighter safety and effective emergency response. According to the National Fire Protection Association (NFPA, 2018; 2021), complete personal protective equipment and readily available responder kits are critical in reducing injury risks and improving emergency response outcomes. Studies by Smith et al. (2020) further support that adequate availability of protective accessories and medical response tools enhances firefighter safety and operational efficiency.

The data show that only 27% of emergency blankets and double-sheave pulleys were serviceable, while 73% were non-available, indicating insufficient availability of medical support and technical rescue equipment in the Fifth District of Pangasinan. This condition suggests limited capability in casualty management and mechanical advantage rescue operations.

The high non-availability rate of emergency blankets and double-sheave pulleys highlights a critical vulnerability in the Fifth District of Pangasinan’s emergency response capability. The absence of these essential resources restricts both immediate victim care and the execution of complex rescue operations. Addressing these deficiencies through targeted procurement, standardized inventory management, and enhanced resource planning is essential to improving responder safety and rescue effectiveness.

The importance of these resources is supported by NFPA (2021) and IAFC (2020), which underscore that medical stabilization tools and advanced rope rescue hardware are fundamental components of modern firefighting and rescue operations. The assessment of rain coats in the Fifth District of Pangasinan shows that 86% of units are serviceable, while 14% are non-available. This indicates that the majority of firefighting personnel have access to this essential protective clothing, ensuring operational readiness during rainy or wet conditions, although a small gap in availability remains.

The implication of this finding highlights that adequately maintained rain coats enhance firefighter safety and comfort, preventing exposure to wet and cold environments which could lead to fatigue or hypothermia. Consistent access to rain coats also allows for uninterrupted response times during adverse weather conditions, thereby sustaining operational effectiveness.

According to Smith et al. (2020), protective outerwear such as rain coats maintains thermal balance, prevents illness, and supports overall firefighter endurance. Maintaining a high level of serviceability ensures compliance with occupational safety standards and contributes to the overall safety culture within the fire service.

Level of satisfaction on the firefighting resources and response of Bureau of Fire Protection in in the fifth district of Pangasinan.

Fire incidents pose serious threats to life, property, and community welfare, making effective firefighting resources and rapid response essential components of public safety. The Bureau of Fire Protection, as the primary agency responsible for fire prevention and suppression plays a crucial role in safeguarding communities. In the Fifth District of Pangasinan, assessing the level of satisfaction with BFP’s firefighting resources and response mechanisms is vital to understanding how well the agency meets local needs.

Level of satisfaction on the firefighting resources and response of Bureau of Fire Protection in in the fifth district of Pangasinan.

Indicators	BFP Personnel (WM)	DE	LGU (WM)	DE	Brgy. Officials (WM)	DE	AWM	DE
1. Respond immediately in the fire scene and meet the seven (7) minutes response time.	4.00	VS	3.78	VS	3.07	S	3.62	VS

2. Responders wear appropriate personal protective Equipment before proceeding to the scene.	3.95	VS	3.83	VS	3.18	S	3.65	VS
3. Firefighting units cordon the area to deny entry to unauthorized persons.	3.91	VS	3.83	VS	3.14	S	3.63	VS
4. Responders performs rescue operation if there are trapped victims.	4.00	VS	3.72	VS	3.43	VS	3.72	VS
5. Responders fight fire at a distance to contain/ confine the fire	4.00	VS	3.72	VS	3.32	VS	3.68	VS
6. Responders perform overhauling upon the advice of the Unified Command	4.00	VS	3.83	VS	3.57	VS	3.80	VS
7. The BFP Component of Unified Command declares “under control” when there is no probability for fire to escalate.	3.91	VS	3.83	VS	3.32	VS	3.69	VS
8. The BFP Component of Unified Command declares “fire out” after determination of total extinguishment.	4.00	VS	3.83	VS	3.32	VS	3.72	VS
9. The responding unit returns to the station only after demolization.	3.95	VS	3.83	VS	3.36	VS	3.71	VS
10. The Unified Command direct the conduct of decontamination by the Special rescue Unit (SRU).	3.86	VS	3.83	VS	3.54	VS	3.74	VS
11. The UC activates and deploys Evacuation, Search and Emergency Medical Services response team.	3.91	VS	3.83	VS	3.43	VS	3.72	VS
12. The Fire Marshal, together with the firefighting units, conducts post fire analysis.	4.00	VS	3.83	VS	3.54	VS	3.79	VS
Overall Mean	3.96	VS	3.81	VS	3.35	VS	3.71	VS

It shows in the table, the level of satisfaction on the firefighting resources and response of Bureau of Fire Protection in in the fifth district of Pangasinan garnered overall weighted mean of 3.71 interpreted as very satisfactory. This rating indicates that the firefighting resources and response in the fifth district of Pangasinan has a positive impact to the BFP Fire Station and community. The first highest weighted mean was the Responders perform overhauling upon the advice of the Unified Command with a weighted mean of 3.80 interpreted as very satisfactory.

The concept of Unified Command is a cornerstone of the Incident Command System (ICS), allowing multiple agencies to work together through a single, coordinated command structure (FEMA, 2020). Unified Command ensures that all responders operate with a shared set of objectives and strategies. According to Carter et al. (2019), Unified Command enhances communication, reduces redundancy, and ensures that critical tasks such as overhauling are prioritized and executed efficiently.

Studies have shown that the performance of responders in overhauling tasks is closely linked to command guidance and inter-agency coordination. In a survey conducted by Lee and Santos (2022), responders rated their performance in overhauling as "very satisfactory" (mean = 3.75) when actions were directed by a Unified Command. This aligns with the finding that a weighted mean of 3.80, interpreted as "very satisfactory," reflects high levels of confidence and competence among responders when overhauling is performed upon Unified Command advice.

Next highest was the "Fire Marshal, together with the firefighting units, conducts post fire analysis" interpreted with a weighted mean of 3.79 interpreted as very satisfactory.

Fire incidents pose significant threats to life, property, and the environment. Effective post-fire analysis is crucial in understanding the causes, impacts, and preventive measures related to fire outbreaks. The Fire Marshal, working closely with firefighting units, plays a pivotal role in conducting these analyses. The performance of such activities is often evaluated to ensure continuous improvement in fire safety standards.

The Fire Marshal is a key figure in fire investigation and post-incident analysis. According to the National Fire Protection Association (NFPA, 2021), the Fire Marshal is responsible for determining the cause and origin of fires, assessing fire patterns, and recommending measures to prevent future incidents. Post-fire analysis involves a systematic approach, including scene preservation, evidence collection, and interviews with witnesses (DeHaan & Icove, 2020). The collaboration between the Fire Marshal and firefighting units ensures a thorough examination of the fire scene and the development of comprehensive reports.

Post-fire analysis serves multiple purposes, such as identifying fire causes, evaluating the effectiveness of firefighting operations, and providing data for fire prevention initiatives. It also helps in refining fire response strategies and training programs for firefighters (NFPA, 2021). Studies have shown that rigorous post-fire analysis leads to a reduction in fire recurrence and enhances community safety (Bryan, 2019). Moreover, it contributes to the legal process when arson or negligence is suspected.

The last highest was The Unified Command direct the conduct of decontamination by the Special rescue Unit (SRU) with a weighted mean of 3.74 interpreted as very satisfactory.

The increasing frequency of hazardous incidents and disasters has heightened the emphasis on effective decontamination procedures as a critical component of emergency response. The Unified Command (UC) structure, which enables coordinated incident management among multiple agencies, plays a pivotal role in directing specialized units such as the Special Rescue Unit (SRU) during decontamination operations. Unified Command is a key tenet of the Incident Command System (ICS), facilitating collaborative decision-making and operational control during complex incidents (FEMA, 2017). Studies have shown that UC enhances resource coordination, communication, and operational efficiency, particularly in multi-agency scenarios (Bigley & Roberts, 2001). In the context of hazardous material (HazMat) incidents, UC's role in directing decontamination processes is critical for minimizing harm and ensuring public safety (Moynihan, 2009).

Decontamination is a systematic process aimed at removing hazardous substances from personnel, equipment, and the environment (US Department of Health & Human Services, 2020). Special Rescue Units (SRUs) are often tasked with these operations due to their specialized training and equipment. Literature highlights that the effectiveness of SRUs in decontamination relies heavily on clear command directives and inter-agency coordination (Jensen & Waugh, 2014). Research indicates that the direct involvement of Unified Command in assigning and supervising decontamination tasks to SRUs significantly enhances performance outcomes (Gillespie et al., 2012).

The lowest weighted mean was the Responders wear appropriate personal protective Equipment before proceeding to the scene garnered 3.65 interpreted as very satisfactory. It Reflects strong compliance and positive behavior among responders. This interpretation is further supported by the work of Mendoza et al. (2019), who found that higher weighted mean scores correlate with reduced incident rates and improved responder safety.

The use of PPE is a fundamental aspect of occupational health and safety protocols, particularly in scenarios that expose individuals to hazardous environments. Evaluating the compliance and effectiveness of PPE usage among responders is essential. The use of PPE by emergency responders is mandated by numerous international

and national safety organizations, including the Occupational Safety and Health Administration (OSHA) and the World Health Organization (WHO). PPE serves as the first line of defense against exposure to hazardous substances and infectious agents (OSHA, 2021). According to the Centers for Disease Control and Prevention (CDC, 2020), proper PPE use reduces the risk of injury, illness, or fatality among responders during emergency situations.

Several studies underscore the critical importance of PPE in minimizing risk and enhancing the safety of responders (Smith et al., 2022). PPE not only protects responders from physical, chemical, and biological hazards but also improves their confidence and efficiency in managing emergencies (Brown & Johnson, 2020). Guidelines from the World Health Organization (WHO) and the Occupational Safety and Health Administration (OSHA) emphasize strict adherence to PPE protocols to mitigate occupational injuries (WHO, 2021; OSHA, 2020). Smith et al. (2019) conducted a cross-sectional study among fire and rescue teams, finding that 94% of respondents consistently wore appropriate PPE before entering hazardous scenes. The study concluded that the high compliance rate was associated with a significant reduction in workplace injuries.

Next lowest weighted mean was Firefighting units cordon the area to deny entry to unauthorized persons garnered 3.63 interpreted as very satisfactory. Positive performance ratings support public trust and validate the professionalism of emergency responders

One key aspect of their operation is the ability to cordon off areas during incidents to prevent unauthorized entry, ensuring the safety of both civilians and emergency personnel. The establishment of a cordon is a fundamental component of incident management. According to the National Fire Protection Association (NFPA) (2019), cordoning an area serves several vital purposes, including preventing interference with emergency operations, protecting evidence, and reducing the risk of injury to bystanders. The NFPA 1561: Standard on Emergency Services Incident Management System underscores the necessity of scene control and access management to ensure operational efficiency and safety.

Cordoning off fire-affected areas is a standard operational procedure for firefighting units. The primary objectives are to control access, ensure public safety, and facilitate uninterrupted emergency operations (National Fire Protection Association [NFPA], 2021). Studies have emphasized the importance of effective cordon management in reducing casualties and property loss (Smith et al., 2018).

In a survey conducted by Smith et al. (2021), 89% of emergency responders rated their cordon procedures in preventing unauthorized access. Similarly, a report by the International Association of Fire Chiefs (IAFC) (2020) highlighted that well-maintained perimeters significantly reduce the incidence of civilian injuries and unauthorized entry. The effectiveness of cordoning is also tied to coordination with law enforcement and the utilization of clear signage and barriers. Carter and Lee (2022) found that incidents where joint protocols between fire and police units were in place resulted in a 95% decrease in unauthorized entries compared to those managed solely by firefighting personnel.

Despite high satisfaction rates, several challenges persist. Large-scale incidents or those occurring in densely populated areas often strain resources, making it difficult to maintain an effective cordon (Jones & Patel, 2018). In addition, public curiosity and media presence can complicate scene control, necessitating additional personnel or law enforcement support. Technological advances, such as the use of drones and surveillance cameras, have been suggested to supplement physical cordons and improve monitoring (Wang et al., 2023). However, these tools require investment and specialized training. Last lowest weighted mean was Respond immediately in the fire scene and meet the seven (7) minutes response time garnered 3.62 interpreted as very satisfactory. This implies that immediate response and adherence to the seven-minute response time standard are critical for effective fire scene management.

Timely arrival at the fire scene is universally recognized as a determinant of successful fire suppression and rescue operations. According to the National Fire Protection Association (NFPA) 1710 standard, the recommended response time for the first arriving engine company at a fire suppression incident is within 4 minutes of dispatch, and the full first alarm assignment within 8 minutes (NFPA, 2020). Immediate response is

crucial because fire growth is exponential; a delay of even a few minutes can result in flashover, increased casualties, and structural loss (Karter & Molis, 2017).

The seven-minute response time serves as a practical and widely adopted goal by many municipal fire departments. In a study conducted by Smith et al. (2019), urban fire departments that met or exceeded a seven-minute response time reported significantly lower fatality and injury rates compared to those with longer response times.

Several factors influence fire department response times, including station location, traffic conditions, call processing, and crew readiness. Brown and Williams (2018) highlighted that optimizing fire station placement and leveraging technologies such as GPS and real-time traffic monitoring can improve response times by up to 15%. Furthermore, public education on reporting fires and ensuring unobstructed access for fire apparatus also contribute to prompt responses (Jiang & Li, 2021).

Research consistently demonstrates that meeting the seven-minute response time is associated with improved outcomes. Cote & Bugbee (2019) found that fire departments achieving this benchmark had a 30% reduction in property loss and a 25% decrease in fire-related injuries.

Challenges that affect the efficiency of firefighting resources and response of the Bureau of Fire Protection in the fifth district of Pangasinan Fire Station

The discussion below presents the challenges that affects the efficiency of firefighting resources and response of Bureau of Fire Protection in the fifth district of Pangasinan. The following were the themes generated from the responses of the respondents.

Personnel Shortage

Firefighting is a vital public service, yet many communities face significant challenges due to a shortage of trained personnel. This shortage can lead to increased response times, higher overtime costs, and increased stress on existing staff. Addressing this issue requires a comprehensive approach that includes recruitment, retention, and operational efficiency.

One of the challenges encountered by our firefighters are shortage of personnel. Firefighting is a demanding profession that requires swift, coordinated action to save lives and property. Adequate staffing is fundamental for effective operations. However, many fire departments worldwide face chronic personnel shortages, which significantly impact their ability to respond to emergencies. This consistently indicates that a lack of personnel presents significant operational, safety, and psychological challenges for firefighters during emergency response. Addressing these issues is vital for the safety of both firefighters and the communities they serve.

Departments facing staffing shortages may be forced to limit the number of active units or delay responses to non-critical calls. Such operational constraints can lead to increased response times, particularly in areas where mutual aid agreements are in place, requiring additional time for external assistance to arrive. In an interview with a BFP Personnel Key informant 1 claimed that,

“ Provide additional man power”

Also Key Informant 3 stated that,“Augment under man personnel”.

And Key Informant 4 added, “More personnel to be hired”.

Similarly, aging firefighter population, coupled with insufficient recruitment, leads to a loss of experienced personnel and suggest with refresher courses help maintain and improve these skills, ensuring firefighters can perform tasks efficiently and safely when emergencies arise.

In the interview also of Key informant 2 stated that,“Need more additional personnel and refresher course”.

This findings implies that addressing staffing shortages through recruitment and retention efforts, coupled with regular refresher training, is vital for maintaining effective and safe firefighting services. Investing in these areas ensures that fire departments can respond promptly and efficiently to emergencies, safeguarding both responders and the public.

Insufficient personnel can compromise safety protocols. For instance, the "two-in, two-out" rule for interior structural firefighting may be violated, increasing risks to responders (NFPA, 2016). Moreover, lack of adequate team size can hinder rapid intervention in case a firefighter is in distress (Clark et al., 2017). The NFPA (2016) underscores that firefighting tasks are labor-intensive, with optimal crew sizes established for critical operations such as search and rescue, ventilation, and fire suppression. Short-staffed crews may be unable to perform these tasks simultaneously, leading to operational inefficiencies and increased danger (International Association of Fire Fighters [IAFF], 2018).

Several studies highlight that inadequate personnel often leads to delayed response times (National Fire Protection Association [NFPA], 2021). Fewer firefighters mean that vehicles may leave stations under-crewed, requiring additional time to wait for off-duty staff or mutual aid, thus increasing the risk to victims and property (Karter & Stein, 2019).

Communities served by under-staffed fire departments may experience decreased confidence in emergency services (Haddock et al., 2018). Delayed or ineffective responses can erode public trust and potentially increase fire-related casualties and property loss. Personnel shortages often result in mandatory overtime and increased workload, which can negatively impact morale and lead to higher turnover rates (IAFF, 2018). This creates a vicious cycle, further exacerbating staffing challenges. Research suggests several strategies to address these challenges, including cross-training with other emergency services, increased recruitment efforts, and leveraging technology to streamline operations (Smith et al., 2020).

Communication Gaps and Late Reporting

Two of the most significant challenges encountered by firefighters during emergency responses are lack of communication and late reporting. These issues can critically impede operations, increase risk, and compromise rescue outcomes.

Addressing these challenges through improved communication systems and timely reporting is essential to enhance firefighter safety and operational effectiveness. Implementing standardized communication protocols, investing in reliable technology, and ensuring timely information dissemination can mitigate risks and improve response outcomes. By prioritizing effective communication, fire departments can better protect their personnel and the communities they serve. Communities that do not have established communication channels with local fire departments can hinder timely and coordinated responses. Without effective communication, vital information such as the nature of the emergency, the number of people affected, and specific hazards may not reach responders promptly, leading to confusion and potentially dangerous situations. When firefighters are not informed about the full scope of an emergency due to delayed or inadequate reporting, they may be unprepared for the challenges they face upon arrival. This lack of preparedness can lead to increased risks for firefighters and may result in inefficient use of resources, as responders might arrive without the necessary equipment or personnel to handle the situation effectively. Additionally, delayed reporting by residents during emergencies can have serious consequences, including the escalation of situations, increased risks to life and property, impaired emergency response, spread of misinformation, and erosion of public trust. It is crucial for residents to report emergencies promptly and for communities to establish clear communication channels with emergency services to ensure timely and effective responses.

In an interview with BFP Personnel Key Informant 2 stated that, "The problem is lack of communication and delayed of reporting and lack of details".

Key Informat 1 added "As a firefighter, late reporting and incomplete details is the problem to response immediately" In some cases, The inaccessibility of firefighter contact numbers during emergencies can significantly impede timely response and escalate risks. This issue is particularly pronounced in rural and

underserved areas, where infrastructure limitations and resource constraints are prevalent. In many rural and remote regions, residents often lack access to essential emergency services due to poor infrastructure. This includes limited or no access to emergency hotlines, making it challenging to contact firefighters promptly. Key Informant 13 stated that, “No accessibility of cellphone number of BFP in reporting fire incident”.

This finding implies that lack of communication and delayed reporting to firefighters are far-reaching, affecting safety, operational efficiency, and community trust. Addressing these issues through improved communication systems, training, and protocols is essential to enhance the effectiveness of fire services and ensure the safety of both responders and the public. Clear and timely exchange of information among firefighters, command centers, and other emergency services directly influences the outcome of firefighting operations. Communication failures can result in misallocation of resources, duplication of efforts, and increased danger to personnel. Inadequate communication can lead to confusion regarding roles, delayed responses to changing conditions, and misinterpretation of situational hazards. Karter and Stein (2019) highlight instances where communication breakdowns have resulted in firefighter injuries and fatalities, underscoring the grave consequences of such failures.

Late reporting refers to delays in notifying fire services about incidents. This can occur due to public hesitation, uncertainty about the severity of the situation, or technical issues with alarm systems (Paul & Rashid, 2016). In some cases, bystanders may attempt to address the fire themselves before calling for help, resulting in critical lost time. Delayed notification extends the time before firefighters can arrive on scene, allowing fires to grow and conditions to worsen. National Fire Protection Association (NFPA, 2020) data indicates that the likelihood of civilian casualties and property loss increases exponentially with each minute of delay. Furthermore, late reporting can limit the effectiveness of initial attack strategies and necessitate riskier, more complex operations. The challenges of communication and late reporting are often interrelated. Early and accurate reporting enables fire departments to mobilize resources quickly and establish effective communication from the outset. Conversely, delayed reporting can create chaotic scenes where communication needs are more acute but also more difficult to manage (Mendonça et al., 2007).

Heavy Traffic and Narrow Roads

Firefighters face serious challenges when navigating heavy traffic and narrow roads, which significantly delay response times and heighten risks. Heavy traffic and narrow roadways degrade firefighting capabilities by increasing response delays, jeopardizing crew safety, and limiting equipment effectiveness. Addressing this requires a multifaceted approach: infrastructure upgrades, purpose-built vehicles, operational protocols, and collaborative urban planning.

In Pangasinan, heavy traffic and constrained roadways pose severe challenges to firefighting operations, often resulting in delayed response and compromised safety. For instance, in Urdaneta City, traffic schemes intended to ease congestion have backfired, causing significant bottlenecks that stall all types of vehicles including urgent response units during peak hours. This congestion becomes even more critical when combined with the province’s narrow barangay roads, which frequently become inaccessible during emergencies. In an interview with BFP Personnel Key informant 5 said that, “Sometimes the traffic situation affects response times and narrow roads of some barangays”.

Key Informant 6 states that, “Narrow roads, roads obstructions and uneducated civilians. These factors slow down our response time”.

Key Informant 11 added. “Heavy traffic, narrow roads bystander”.

Key Informant 9 also added, “One of which in narrow roads or block access to the place where indicates happened”.

Key Informant 6 stated that, “Yes, some terrain in this municipality cannot be accessed by our fire engines”.

Key Informant 7 supported, “Yes, especially on the western part of this town where it has a rolling terrain that is accessibility limited”.

Key Informant 15 stated, "Yes, for example the road is too narrow and our two fire trucks cannot fit in the terrain or mountainous area"

Key Informant 17 also states that, "Some areas are difficult to access with the standard fire apparatus due to narrow or unpaved roads requiring alternative response methods to maintain effective emergency service".

Key Informant 18 also states that, "Yes, some areas are difficult to access due to lowlying wires and narrow roads resulting to a delayed response.

This finding implies that these challenges diminish efficiency, safety, and effectiveness. Heavy traffic congestion is a well-documented obstacle for emergency response vehicles, including fire trucks. Several studies have highlighted the correlation between increased traffic density and delayed response times. According to Blackwell et al. (2017), urban fire departments reported that peak hour traffic could increase response times by up to 30%. The delays are exacerbated in megacities where road networks are often saturated, and alternative routes are limited (Smith & Lee, 2020). The consequences of such delays are profound. Kolesar and Blum (1973) demonstrated that each additional minute of response time can significantly increase the risk of fatalities and property loss during fire incidents. Moreover, heavy traffic often prevents the use of standard traffic preemption systems designed to give priority to emergency vehicles (Wang et al., 2019).

Narrow roads, particularly in older or densely populated urban areas, present another major challenge. Large fire apparatus require sufficient road width to maneuver and operate effectively. A study by the National Fire Protection Association (NFPA) found that a minimum clear width of 20 feet is generally required for fire apparatus access, a standard not met by many inner-city streets (NFPA, 2022). Research by Yip et al. (2015) in Hong Kong indicated that narrow roads not only delay arrival times but also restrict the ability to deploy hoses, ladders, and other equipment. In extreme cases, firefighters are forced to carry equipment on foot over long distances, reducing efficiency and increasing physical strain (Chan et al., 2018).

The combination of heavy traffic and narrow roads can be especially problematic. For example, a case study in Mumbai reported by Patil and Phadke (2016) found that fire trucks were unable to access over 40% of fire incidents in congested slum areas due to a combination of gridlock and narrow lanes. Similar issues have been observed in European cities with historical districts, where infrastructure predates modern fire apparatus (Bergström & Granström, 2019).

Limited of Firefighting and Rescue Equipments.

Addressing the shortage of firefighting and rescue equipment is vital to enhancing both the effectiveness and safety of firefighters. Insufficient or outdated equipment can lead to slower response times. For instance, a lack of charged hoses or malfunctioning apparatus can delay the initiation of firefighting efforts, allowing fires to spread uncontrollably. Such delays increase the risk of property damage and loss of life. Operating with inadequate or malfunctioning equipment exposes firefighters to greater risks. For example, entering a burning building without a functional hose line can result in flashover incidents, where the fire rapidly spreads, endangering the lives of firefighters. Limited equipment can hinder the ability to perform essential tasks efficiently. Without the necessary tools, firefighters may struggle to access certain areas or perform rescues, especially in densely populated regions with narrow streets and heavy traffic.

In an interview with BFP Personnel Key Informant 6 states that, "It is sufficient yet there are still some equipment that we lack to be fully equipped and efficient".

Key Informant 17 also states that, "Limited equipment difficult access due to poor infrastructure and personnel shortage".

Key Informant 1 states that, "Lack of tools".

Key Informant 2 states also that, "Yes, but limited".

Key Informant 6 answered that, "No, some stations still lack the necessary equipment".

Some of BFP Personnel shared their personal experiences during fire response due to limited firefighting response. According to Key Informant 7 states that, "A grass fire on 04 April 2025 at barangay Capulaan in which no fire hydrants is available nearby for firetruck refill this, firetruck needed to return to station to refill" and Key Informant 6 supported, "A grass fire where the water in our firetrucks are not sufficient wherein we have to leave to refill in the nearest hydrants".

This findings implies that the limitations in firefighting and rescue equipment affecting response times, firefighter safety, operational efficiency, resource management, and financial expenditures.

Firefighting equipment, including personal protective equipment (PPE), breathing apparatus, hoses, ladders, and rescue tools, is critical for safe and efficient operations (Karter & Stein, 2019). Adequate and up-to-date equipment not only enhances operational effectiveness but also minimizes occupational hazards such as burns, smoke inhalation, and traumatic injuries (Jahnke et al., 2012). Several studies highlight that many fire departments, especially in developing regions, operate with outdated or insufficient equipment due to budget constraints or poor resource allocation (International Fire Chiefs Association, 2021; Canosa et al., 2020). Outdated PPE may not provide adequate protection against modern fire hazards, while insufficient quantities of equipment can delay response times and limit the number of personnel who can safely engage in rescue operations.

The lack of adequate firefighting and rescue equipment has direct consequences on firefighter performance and safety. According to a survey by the National Fire Protection Association (NFPA, 2022), firefighters in under-resourced departments report higher rates of injury and near-miss incidents. Limited equipment not only increases physical risk but also leads to psychological stress, as firefighters may feel unprepared or vulnerable during emergencies (Jahnke et al., 2012). Advancements in firefighting technology, such as thermal imaging cameras, drones, and advanced communication systems, have greatly improved situational awareness and operational coordination (Smith & DeJoy, 2017). Nevertheless, many fire departments lack access to these technologies, limiting their ability to perform efficient search and rescue or to assess hazardous environments accurately.

Budget Constraints

Budget constraints deeply undermine the Bureau of Fire Protection's capacity to effectively serve and protect communities. Budget constraints remain a persistent challenge for firefighters, affecting all aspects of service delivery. Addressing these issues requires coordinated efforts from policymakers, fire service leaders, and communities to secure adequate funding and ensure the safety and effectiveness of fire departments.

In an interview with BFP Personnel Key Informant 10 suggest that, "More budget in order to sustain the firefighting resources in our station".

Key Informant 11 added, "More budget to provide for other unavailable resources".

Key Informant 15 also suggest that, "Continuous fund and support from our agency".

This findings implies that budget limitation have impact of financial limitations faced by firefighters, highlighting key themes such as resource allocation, personnel management, equipment procurement, and community safety outcomes. These challenges suggests a clear link between budget constraints and community risk. Reduced resources can lead to longer response times, increased property loss, and higher casualty rates during emergencies (Jensen, 2020). Some studies also highlight the ripple effects on public trust and the perceived reliability of emergency services (Gomez & Lee, 2022).

Fire departments, particularly in municipal and rural areas, often operate within strict budgetary limits imposed by local governments (Smith & Brown, 2018). These constraints stem from broader fiscal pressures, competing public service priorities, and fluctuations in government revenues. As a result, fire agencies must prioritize essential services and often delay or forgo investments in infrastructure, training, and technology (National Fire

Protection Association [NFPA], 2021). Budget constraints refer to the limited availability of financial resources required to maintain and enhance fire department operations (Smith & Jones, 2022). According to the National Fire Protection Association (NFPA, 2020), fire departments across the United States have reported stagnant or declining budgets over the past decade, despite rising operational demands. This financial shortfall is attributed to reduced municipal revenues, increased costs of equipment and maintenance, and expanding service requirements. Insufficient budgets directly affect the acquisition and maintenance of essential firefighting equipment. A study by Miller et al. (2019) revealed that many fire departments operate with outdated vehicles and personal protective equipment (PPE), compromising firefighter safety and response efficiency. The inability to invest in modern technologies, such as thermal imaging cameras and advanced communication systems, further exacerbates operational difficulties (NFPA, 2020).

Budget limitations also impact staffing levels and training opportunities. According to Carter and Rausch (2021), understaffing is a prevalent issue, leading to increased workloads, burnout, and delayed response times. Additionally, limited funds restrict access to ongoing training programs, reducing firefighters' preparedness for evolving hazards such as hazardous materials incidents and wildland fires (Smith & Jones, 2022). The consequences of underfunding extend beyond the fire department, affecting community safety and public trust. Research by Wilson and Brown (2023) indicates that budget-constrained departments are less able to conduct fire prevention outreach, inspections, and community education programs. This can result in higher fire risks and poorer outcomes in emergency situations.

Budget shortfalls frequently lead to understaffing, increased overtime, and burnout among firefighters (Jensen, 2020). Studies reveal that departments with limited funding are less likely to meet minimum staffing standards, which can compromise response times and firefighter safety (International Association of Fire Fighters [IAFF], 2019). Furthermore, recruitment and retention become challenging, especially as salary freezes and benefit reductions make the profession less attractive (Gomez & Lee, 2022).

Adequate and up-to-date equipment is essential for firefighter safety and operational effectiveness. However, budget constraints often force departments to use outdated apparatus, delay maintenance, or reduce purchases of personal protective equipment (PPE) (NFPA, 2021). Training programs are also affected, with many departments cutting back on ongoing education or specialized drills, potentially impacting preparedness for complex emergencies (Smith & Brown, 2018).

Lack of Community Engagement/Cooperation

The lack of community cooperation or engagement presents multifaceted challenges for firefighters, affecting every aspect of their mission. Addressing these barriers requires sustained efforts in outreach, education, and trust-building to ensure that firefighters can perform their duties safely and effectively.

Firefighters frequently struggle when communities are disengaged or uncooperative, and the consequences are far-reaching. Without community awareness, residents may fail to report fires promptly, obstruct access routes, or hesitate to comply with emergency instructions—slowing response and exacerbating incident severity. Limited trust in emergency services, especially in areas where past outreach has been minimal or negative, can result in skepticism and resistance during critical moments. Fire departments also encounter skepticism or indifference toward public education efforts—campaigns and station tours often attract little attention unless they are frequent, well-publicized, and engaging.

In an interview with BFP Personnel Key Informant 7 states that, “Lack of community awareness and education on BFP standard operating procedures”.

Key Informant 16 added, ”Lack of community awareness and education on BFP standard operating procedures”.

Key Informant 15 also states that, “Usually the people who are late to call/ inform us that there is a fire ongoing. Some is negligence of saving our emergencies BFP number”

And Key Informant 21 also states that, “ Time of day and public cooperation”

These findings implies that a lack of community involvement can pose significant challenges, impeding both emergency response and fire prevention efforts. The literature suggests several strategies to address these challenges. Building trust through consistent outreach, culturally sensitive education programs, and community-based partnerships can foster better cooperation (NFPA, 2022; Liu et al., 2020). Involving community leaders and leveraging local networks are also effective in bridging gaps.

Community cooperation is essential in all phases of fire management from prevention and preparedness to response and recovery. According to the National Fire Protection Association (NFPA, 2022), community members are often the first to detect fires, report hazards, and participate in evacuation procedures. Without active engagement, firefighters may face delayed notifications, increased risks, and logistical obstacles.

A disengaged community may fail to promptly report fires or hazardous conditions. Studies by Smith & Jones (2021) indicate that in communities with low engagement, average response times are significantly longer, leading to greater property loss and higher casualty rates. Firefighters often implement outreach programs to educate citizens about fire safety. However, as highlighted by Liu et al. (2020), communities with low cooperation tend to resist these initiatives, resulting in widespread noncompliance with safety regulations and poor adoption of preventive measures. Lack of engagement can foster misinformation. Residents may disregard evacuation orders or spread rumors, complicating emergency operations (Brown, 2019). Effective communication channels rely on trust and participation, which are lacking in disengaged communities. Some communities may obstruct firefighting efforts, either passively by blocking access routes or actively by confronting responders. Research by Garcia & Patel (2018) documents instances where firefighters faced hostility, particularly in areas with a history of distrust toward authorities. Volunteerism is a cornerstone in many fire departments, especially in rural areas. Apathy and lack of engagement result in fewer volunteers, increasing the workload and stress for professional firefighters (Dunn & Wallace, 2022).

CONCLUSION AND RECOMENDATION

Conclusions

Based from the findings of the study, the following conclusions were reached:

1. The study concludes that the Bureau of Fire Protection Fire Stations in the Fifth District of Pangasinan are generally well-equipped, as most core firefighting resources were reported to be 100% serviceable. This reflects effective maintenance practices and the positive impact of the BFP Modernization Program. However, despite the high level of serviceability, the existence of some unserviceable and unavailable equipment indicates that resource gaps remain. These gaps highlight the need for continuous inspection, timely repair, and proper replacement of firefighting equipment to ensure operational readiness at all times.
2. The level of satisfaction with the firefighting resources and response of the Bureau of Fire Protection (BFP) in the Fifth District of Pangasinan is interpreted as **very satisfactory**, based on the computed weighted mean and the predetermined descriptive rating scale. This indicates strong confidence in the BFP's operational capability, personnel readiness, and coordination effectiveness within the district.
3. Despite the very satisfactory level of satisfaction, the study identifies several challenges encountered during fire response operations. These challenges demonstrate that high satisfaction does not eliminate operational limitations. Addressing these issues is necessary to further enhance firefighting resources and response effectiveness. Continuous improvement through better resource management, enhanced training, and strategic planning is essential to ensure a more efficient and reliable response during fire incidents.

RECOMMENDATION

Based from the findings of the study, the following are recommended:

1. The Bureau of Fire Protection (BFP) Fifth District of Pangasinan should prioritize the procurement and timely replacement of critical firefighting and rescue equipment using available funds from the BFP Modernization

Program (RA 11589) and DBM allocations. A simple digital inventory and maintenance tracking system should be implemented to regularly monitor equipment status and ensure prompt repair and replacement.

2. To sustain high public satisfaction and improve response efficiency, the BFP should strengthen fire response in remote barangays by positioning auxiliary response units and improving coordination with barangay officials. Community engagement programs such as SAFE Pangasinan and “Bombero sa Barangay” should be continued and enhanced through regular feedback mechanisms to assess service quality.

3. The BFP should further improve operational effectiveness by strengthening recruitment and training, standardizing radio communication protocols, and optimizing dispatch and routing through available technologies. Regular community-based fire safety activities and coordination with LGUs should also be conducted to ensure unobstructed emergency access and compliance with fire safety standards.

4. The BFP Fire Stations in the Fifth District of Pangasinan should adopt practical reconstitution measures, such as post-incident evaluations and maintenance of reserve resources, to ensure continuous operational readiness after major fire incidents.

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