Development of the Metropolitan Police Emergency Call System

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Abstract

The objectives of this research were to discern the problems facing the metropolitan police emergency call system and develop a strategy for best practices from analysis of existing foreign emergency call systems. In this research, quantitative and qualitative methods were employed. The results revealed that the metropolitan police emergency call technology systems is outdated, resulting in failed operations. The issue has been compounded by inadequate facilities and personnel with insufficient legal and police tactical knowledge. Budget shortages have occupied the ability to acquire necessary tools and equipment for effective action without support from government. Ideally, crime victims or injured persons should be able to call the emergency call center for police, ambulance, firefighters or other government and public sector services which are offered for free. It is recommended that emergency calling should be centralized in one center of operation called the "National Emergency Call Center" to improve the efficiency and efficacy of the emergency call system. Moreover, the metropolitan police center should integrate other tools for surveillance and crime prevention into its responses such as Miracle Eyes, Police I Lert You, and social media in order to increase operational efficiency. Social media can also be deployed as an effective means of raising public awareness and bringing issues to the attention of the police.

Keywords: Emergency Call National, Emergency Call Center, Metropolitan Police Bureau

Introduction

Preserving social harmony and the welfare of citizens are key factors in furthering a country's economic growth. However, current crime rates have risen in Thailand, with much of the increase concentrated in areas of population growth and high population density, especially in urban centers such as Bangkok. Increased crime rates, especially in large cities, are further complicated by economic and social factors, which have both increased populations, but also created a phenomenon of a large transient population. Bangkok has an area of nearly 1,568.75 square kilometers, which has nearly 5,696,409 residents, but this number expands by over 7.8 million, when transient shift workers and commuting students are factored (National Statistical Office, 2012). The fluctuating population, coupled with economic challenges of urban life, have spurred rapid changes in the social fabric of Thailand. This in turn has caused a proliferation of crime that is often motivated by economic factors such as greed and materialism.

When a crime does occur, the typical response is for the police to be alerted via the emergency call center by dialing 191. Theoretically, when police receive a call, they are dispatched to the scene of the incident, with the emergency call center at 191 acting as the first point of contact after an emergency. The public presence of police and their ability to respond to emergencies plays a vital role in the social psyche and sense of safety within communities. Therefore, it is imperative that the emergency call center function and be structured in a manner that is most conducive to its efficacy and efficiency.

The current emergency call system in Thailand is both structurally and technologically inhibited. In Bangkok, when an individual dials 191, calls are directed to the Emergency Call

Receiving Console, who then transfers the call to one of 60 operational lines at the Metropolitan Police. The current system routes calls through an outside entity called One to One Co., Ltd. The daily working of the emergency call lines is divided into 3 shifts, with 10, 25 and 25 staff working between 07:00-16:00, 13:00-22:00, and 22:00-07:00 respectively. When they receive calls, procedure dictates that the call receiver record the call so that necessary information can be dispatched via radio to the correct police jurisdiction, who are then tasked with responding to the incident.

Literature Review

The Emergency Call System of the Metropolitan Police Bureau in Thailand is under the control of the Emergency Call Center, with emergency calls being directed by the Patrol and Special Operations Division when 191 is dialed. When an emergency call is received, the procedure is as follows:

1. The victim or individual in an emergency situations dials 191. The call is directed to the local telephone exchange, which transfers the call to the emergency call center.

2. The receptionist at the emergency call center records information about the incident, such as the cause and location, in a computer database. This information is passed to the dispatcher. The caller's phone number and location are also logged by the PABX system, or "private automatic branch exchange," a telephone-based system that is automated. The PABX also records data such as the number of calls received and the number of missed emergency calls.

3. Once the dispatcher receives the call, patrol officer is sent to the scene of the incident, with urgent cases receiving greater priority.

4. Once the officer has reached the scene, assessed the situation and taken necessary action, they then report back to the Emergency Call Center, this includes recording the amount of time it took them to reach the scene. The data is recorded in the electronic system (Commander of Patrol and Special Operation Unit, 2017).

Currently, the Metropolitan Police Bureau has updated this call framework and is developing alternative channels to report crimes and emergencies. The new system is base on the economic development model, Thailand 4.0, which aims to push the country past an agrarian-based economic model. Under Thailand 4.0, new technologies and systems are being implemented into the law enforcement response and crime prevention strategies. Miracle Eyes, for example, is the project that the Metropolitan Police Bureau and a private company have developed since 2012 to install CCTV in any home that seeks to participate. The installation of CCTV is intended to help with incident reporting to the Metropolitan Police Bureau. CCTV systems are equipped with sensors capable of detecting abnormalities or movement around the home. When the sensor is activated, a warning is sent to the system user and the Miracle Eyes Center, who then contact police officers to investigate the scene (Deputy Commander Metropolitan Police, 2016).

"Police I Lert You" is another the system the Metropolitan Police Bureau implemented in 2015, which utilizes a mobile application to allow people to report incidents. Due to the app's integration with mobile technology, the location of the crime scene or location of reporting can be pinpointed for more efficient law enforcement response. Moreover, social media has also become an avenue for crime reporting and prevention. Individuals are able to report incidents directly to the law enforcement via Facebook and Line. This method is quick and facilitates communication by allowing direct communication with those involved in incidents. Many reports through this mechanism are minor issues (Patrol Inspector 2, 2016).

Foreign Emergency Call System Analysis

The emergency call system of United Kingdom in advantageous in it integration of police, ambulance and fire departments, while also including CCTV monitoring to mitigate potential

criminal or terrorist activities. The emergency call system of the United Kingdom has provided a model for the Royal Thai Police. The Thai police have sought to implement a system that allows for the prevention of terrorist threats and criminal activity through CCTV monitoring, including the use of an integrated system database and response mechanisms to identify involved persons and respond appropriately.

The United States has designated the number 911 for emergency situations. When this number is dialed, emergency call centers dispatch the appropriate emergency response team from law enforcement to emergency medical response (ambulances) to fire departments. In many areas, information from CCTV is also used to support criminal investigations, improve public safety and prevent crime and potential terrorism.

In the United States, police and emergency personnel also have access to integrated databases that can provide information such as facial recognition, criminal databases, arrest records and driver registration information. The integration and cross-referencing of these databases allow law enforcement to more quickly identify individuals involved in incidents and respond appropriately. Police and emergency personnel also have the ability to share information with the public in emergency situations through radio, cell phones and television, such as Amber Alerts, which are often disseminate when there are incidents of missing or abducted children.

Australia has designated the number 000 for emergency situations requiring police, fire departments or emergency medical responses. In Australia, the number 000 is able to be dialled in emergency situations as a free call regardless of mobile or cellular restrictions or cell tower signal issues.

Japan has assigned the number 110 for emergency reporting. Calls are directed to an emergency call center, which coordinates with emergency response teams ranging from police to medical and fire departments. The unique feature of Japanese Emergency Call Center is that call operators are fluent in English and are thus able to communicate with tourists and foreigners in emergency situations.

South Korea has designated the number 119 as the emergency number. The South Korean system is especially impressive as call operators are able to communicate in English, Japanese, Chinese and South Korean. The number 112 is also specially designated for contacting the police for general complaints outside of emergent situations and reporting missing individuals. South Korea has also integrated the Public Relations Center with Radio Communication so that the public receives emergency announcements for fires, natural disasters, traffic and terrorism. Moreover, the country's emergency call center conducted a study and determined that the majority of tourists in South Korea were either Japanese or Chinese. Therefore, they have added Japanese and Chinese to English as alternative languages for emergency broadcasts.

Hong Kong assigned the telephone number 119 as the emergency number. Hong Kong is similar to Thailand in that it faces an issue with prank emergency calls. To combat the issue, they have instituted a fine as high as HK$2000.

In addition to improving calling mechanisms, the Thai Metropolitan Police Bureau needs prevent crime in a multifaceted strategy that addresses motives and situations that are conducive to criminal behavior. Crime prevention is vital task for the law enforcement as well as the public services. Crime prevention measures extend to the manner in which criminals are arrested and monitored as well as an understanding of situations or social factors that lead to greater crime. When criminals do commit a crime, another issue is preventing recidivism or re-offense. Harsh punishments can act a deterrent to prevent crime. However, when criminal incidents occur, crime prevention strategies should be integrated into the response and investigation of the crime, to prevent the same thing from happening again. Criminal offences often cause damage to individuals and society that can be

irreparable. Therefore, preventing these types of crimes, as opposed to retaliatory justice, may be more effective in the long term.

The practical crime prevention strategies that the Thai police are considering are founded on the study of several theoretical schools of thought. The "public relations theory" popularized by J. Grunig 1980s discussed public relations in terms of communication strategies between individuals in society and community organizations. In instances of crime prevention, Grunig's model is favored less than the "community relations theory," the theory argued a link between the nature of urban surroundings and criminal behavior, connecting time, urban planning and locations are key factors. Much earlier, French sociologist, Durkheim, also proposed correlations between population density, social conflict and inequitable divisions of labor with crime (Piemsomboon, 2002).

There are four key factors in business, which can be summarized as the "4Ms":

1) Man: This is the most significant factor as an organization needs sufficient and trained personnel to operate in the most efficient and effective manner.

2) Money: The financial health of an organization determines its capabilities and limitations. In a business, cost must be minimized, but the budget should also be adequate to allow for maximize productivity in the most efficient and effective way.

3) Material: Since raw materials are essential ingredient in manufacturing products, the management must learn to manage raw materials effectively, considering minimum cost and maximizing profit by planning appropriately to have the materials match the project's demand.

4) Method: This involves actual operational step, which should include planning and execution for the situation, job and resources.

In Thailand, the government has the option to hire private companies for government projects and contracts. Privatization is largely viewed positively, with many in Thailand believing that it increases productivity, profit, organizational efficacy and efficiency.

Therefore, crime reporting and prevention is a multifaceted issue. Law enforcement and social institutions should work to minimize the opportunity for crimes to be committed, implement effective crime prevention strategies that act proactively rather than reactively (National Advisory Commission on Criminal Justice Standards and Goals, 1994). The nature of social environments and conditions should also be a factor that is considered in crime prevention strategies. Fostering a sense of public safety and inclusivity are vital to creating an environment that prevents criminal behavior (Piensomboon, 2002). Involving community members in crime prevention is also key, as they can provide vital input and support for community monitoring, urban planning and the integration of community outreach projects. Further developing an emergency call system that is integrated into the patrol system in Thailand would also contribute to the efficacy of crime response, prevention and the sense of public safety.

A study on the Miracle Eyes system found that greater public participation is needed for the program to be effective. This can be done by increasing public awareness through various media outlets, educating and involving community leaders, business entrepreneurs, representatives and agencies as well as incorporating public feedback regarding the mechanics of the program. The research suggested improvements to Miracle Eyes including:

1. Increased budget to install and maintain CCTV in the public places.

2. Establish a CCTV Control Center with data sharing between government and private agencies with 24 hour monitoring. It has been suggested that the number of officers in a jurisdiction equal the number of cameras. Within departments, trained personnel and officers should also be tasked with monitoring CCTV feeds for crucial information.

3. Develop personnel and knowledge in order to create skilled experts in managing CCTV system. There is also a need to plan and designating data storage for better analysis and crime

prevention. The development of manuals to distribute to each police station would also help standardize and inform about the use and application of CCTV in crime response and prevention.

4. Collaboration between technical experts and legal experts to protect individual rights and institute security procedures for the distributing data and insure user confidence.

5. The police superintendent must be thoroughly knowledgeable on the system in order to manage it and solve issues that may arise.

6.The police who operate the CCTV in the control room must be trained experts who understand the Miracle Eyes System and all equipment.

The existing "Electronic Police Station" system was implemented to serve as an electronic information gathering mechanism for the police stations throughout Bangkok. Analysis of the system reveals that more channels of reporting are needed for the public to notify law enforcement about incidents. For example, while complaints or notices can currently be made through the internet, this platform should be expanded to include mobile applications like LINE or Facebook. These platforms allow people to access information easily and can provide alternatives for those who may be afraid of making the report because they are worried about their safety. By allowing the report online, information on the informant can be kept confidential while also allowing for rapid dissemination of information such as videos, addresses or photos.

The police departments can also improve their public relations outreach strategies. They can increase community involvement, communication, visibility and provide updates of activities and important information on social media and web platforms.

To combat issues of false reporting or "prank" calls, the Metropolitan Police department needs to implement measures to punish those who abuse the system in this way. This system needs to be both efficient and reliable, acting as a tool to facilitate work for the police rather than complicating it.

Data and Methods

The methodology of this work is a mixed-methods methodology, which consisted of quantitative and qualitative data collection. For the qualitative method, data was collected from focus groups of 25 patrol and special force police officers from intermediate and operational rankings. Interviews from 12 senior police officers were also collected. Quantitative data was collected using a survey of sample groups of police officers from 18 of the 99 police stations in Bangkok and 23 other crime related agencies in the city. From this sample, 500 participants were selected to answer survey questions. All 23 agencies that were contacted responded to the survey, with a 100% response rate, while 95% of police officers surveyed responded. Moreover, 100 participants who report to the emergency call center were responded the survey about 80%.

The survey for the police officers consisted of 45 questions, while the survey for crime-related agencies consisted of 30 questions. The responses were calibrated based on a numerical scale, valued from 1 to 5 points (1= least agree, 2= highly agree, 3= average agree, 4= highly agree, 5= most agree). The total score ranged from 14 to 70 points. The reliability coefficient (Conbach's alpha) was .7. This questionnaire was comprised of three primary areas of inquiry around issues in the metropolitan emergency call system including the logistical structure, efficacy and alternative reporting channels.

Research Results

This research aims to address current problems, obstacles, and setbacks to the Emergency Call System and analyze it in order to implement an appropriate solution model that allows

the system to operate with efficiency and efficacy. Of the 500 participants questioned, the statistics on their sex, age, education, marital status, and office of employment were as follows: respondents tended to be male (438 people / 87.60%), ages 22-30 years (165 people / 31.20%), education lower than a bachelor's degree (214 people / 42.80%), married (285 people / 57%), and earning income between 15,000- 24,999 baht (213 people / 42.60%).

Of the results from the questionnaire, the most striking statistics include:

1. 50.6% of the respondents "Most Agree" that "manpower is lacking skills to perform tasks."

2. 61.6% believe to "there are problems with radio communication during the operation which tended to delay coordination with the police."

3. 75.8% believe that there is a lack of equipment to perform tasks, including insufficient computers. Furthermore, they conveyed that there is no backup or technical support to manage technology and system errors.

4. 56.4% of respondents said there were inconsistencies in procedures for taking calls at the Emergency Call Center, causing miscommunications and inaccurate information for police.

5. 57.2% of respondents indicated that patrol vehicles are out of date and do not have GPS mapping systems and arrest warrant validating systems

Interviews with senior police officers also indicate inconsistencies and insufficiencies in the call system, which cause errors and misinformation. Transcripts from two interviews conveyed this concern:

"The Metropolitan Police Emergency Call System 191 is the first point of contact for emergency services, which then communicates with the Radio Center Division 1-9 that delivers the message to the police station. Due to a lack of procedural understanding, the system is carried out ineffectively. The Metropolitan Police Station should train personnel to understand the system and use up-to-date technology. Moreover, police station superintendents should seek to collaborate with people, states, and the private sector to monitoring areas. They need to increase the number of personnel and collaborate with the community."

Another interviewee expressed differing sentiments, however:

"The channel for taking emergency call is effective, convenient and fast. Other emergency channels, such as Line and Facebook, are used by callers for non-emergency cases. Moreover, reporting emergencies through SMS or MMS were implemented once, but were inappropriate for emergency situations. Voice communication was found to be best, but the Emergency Call System needs to be able to identify the telephone number of the caller to prevent false or lost calls."

The interview and survey data collected identified major concerns and obstacles with the Emergency Call System. Presently, Thailand has entered the Thailand 4.0 phase of economic development, aimed at propelling the country into the digital age. However, the Emergency Call Center is operating on an old system that is verging on being obsolete and is ultimately not able to function adequately. The following table illustrates the survey data results:

Table 1 Comparison of responses by police and agency individuals on problems with the Metropolitan Police Bureau Emergency Call System

Appropriate Model and Solution	*X*		*S.D.*		*T*	*p*
	Police	People	Police	People		
1. Out-of-date technological system and equipment for reporting emergencies	3.89	4.54	0.946	0.576	-9.68	0.000

Table 1 (Con.)

Appropriate Model and Solution	X		S.D.		T	p
	Police	People	Police	People		
2. Problems with radio communication between police officers, making data delivery unclear and delaying police response	3.73	4.03	0.969	0.822	-3.21	0.002
3. Procedure for taking the emergency calls is unclear and below minimum standards	3.59	4.35	0.974	0.845	-8.03	0.000

Table 1 shows comparison of the mean of the opinion score (scale of 1-5) on issues relating to problems and solutions within the emergency call system. the differing opinions of police and members of the public on potential improvements to the Emergency Call system. In all cases, the police surveyed believed more strongly than members of the public that an Out-of-date technological system, Problems with radio communication and Procedure for taking the emergency calls is below minimum standards were necessary.

Table 2 Comparison of suggestions for the emergency call system between police officers and members of the public.

Appropriate Metropolitan Police Emergency Call System	X		S.D.		t	p
	Police	People	Police	People		
1. Integrated radio system that would function at the Emergency Call Center, to provide information on emergencies, traffic and area reports.	4.30	4.08	0.704	0.884	2.35	0.021
2. There should be development of other reporting mechanisms for emergencies	4.13	4.12	0.859	0.574	0.15	0.885
3. Designate No.191 for emergency situations such as crimes, calling ambulance, and fire engine.	4.154	3.97	0.874	0.658	2.40	0.017
4. Develop a more advanced technological system.	4.46	4.17	0.664	0.514	4.79	0.000

Table 2 illustrates the differing opinions of police and members of the public on potential improvements to the Emergency Call system. In all cases, the police surveyed believed more strongly than members of the public that an integrated radio system, alternative reporting mechanisms, streamlined emergency call number and more advanced technological system were necessary.

Discussion

This study has examined the multifacet issues of the Thai Metropolitican Police Emergency Call System. The current issues facing the system as well as potential solutions were evaluated, researched and discussed. As Thailand moves into the era of the Thailand 4.0 economic policy that encourages digital growth, the Emergency Call Center, like so many social and public services must modernize and resolve serious operational shortcomings.
Personnel shortages within the police force have inhibited officers from fulfilling their roles to the degree necessary. Inadequate staffing also extends beyond the police to other divisions in the emergency response chain, from radio dispatchers to and patrol officers. Insufficient

budgets have created financial constraints on both personnel as well as the technology used in the emergency response system, which is unable to be updated or maintained adequately. The Emergency Call Center and designated emergency number 191 also currently lack public relations outreach to make the public aware of emergency situations such as natural disaster, crime incidents or terrorism.

The emergency response systems in England, the United States, Australia, Japan and South Korea, Hong Kong were all evaluated as a means of developing an improved model that could be implemented in Thailand. All of the countries studied had a direct mechanism for the public to contact emergency services such as police, fire department or emergency medical services. By contrast, in Thailand, calling the designated emergency number only allows for contact with the police, excluding fire and emergency medical teams. The data and evaluation of other countries' models indicate that an integrated emergency response system should be implemented in Thailand, with potential consideration for the use of private agencies such as the Bangkok Administration, Rescue Foundation and private hospital.

Japan and South Korea have made special considerations not just for their own citizens, but also for foreigners in country who may end up in an emergency situation. The emergency call systems in these countries recruit personnel with language abilities in English and Chinese, among others. They have also installed more CCTV cameras that link to the police stations to both prevent and respond to crime or emergency situations that may arise. The integration of more accurate, real-time information is vital to the future of Thai emergency call systems. This should also consider increased vigilance for terrorist activity, including awareness of social and political conditions in neighboring countries with on-going, real-time risk assessments.

Strategies need to be implemented so that the emergency call system and officers in the field have access to real-time crime and emergency information, such as vital locations, the nature of the incident and the individuals involved. This also extends to improved technology, which can help to provide officers with relevant information and database access for things such as home registrations, automobile registrations and crime records.

The study also examined other mechanisms of crime detection and prevention, such as the Miracle Eyes program, which was started in 2012. "Police I Lert You" is another mechanism for police notification and allows for individuals to alert the police through mobile applications. Increasing the use of social media platforms for crime reporting and prevention is also recommended. Increasing information sharing between the police and the public is vital. Individuals need to know how to reach the police to report crimes or emergency situations and the police need mechanisms to be able to better locate individuals in emergency situations. The recording and use of phone numbers for location tracking was also suggested. Moreover, police need better communication strategies for public broadcasts of public safety information in emergency situations such as natural disaster, fire or terrorism.

Lastly, the Metropolitan Police need to develop a model for a national emergency call center that is integrated and standardized. The center must be run by competent officers who can oversee the implementation of a national system for crime monitoring and prevention, such as further installation of CCTV cameras, integrated databases and collaboration with other agencies in both the public and private sector. Personnel must receive adequate training and have access to necessary and up to date technological tools to facilitate their roles.

The implementation of an integrated and streamlined emergency response system is necessary. Designating 191 as a multipurpose emergency number through a "National Emergency Call Center" model would vastly improve public safety and police response and emergency personnel response to situations.
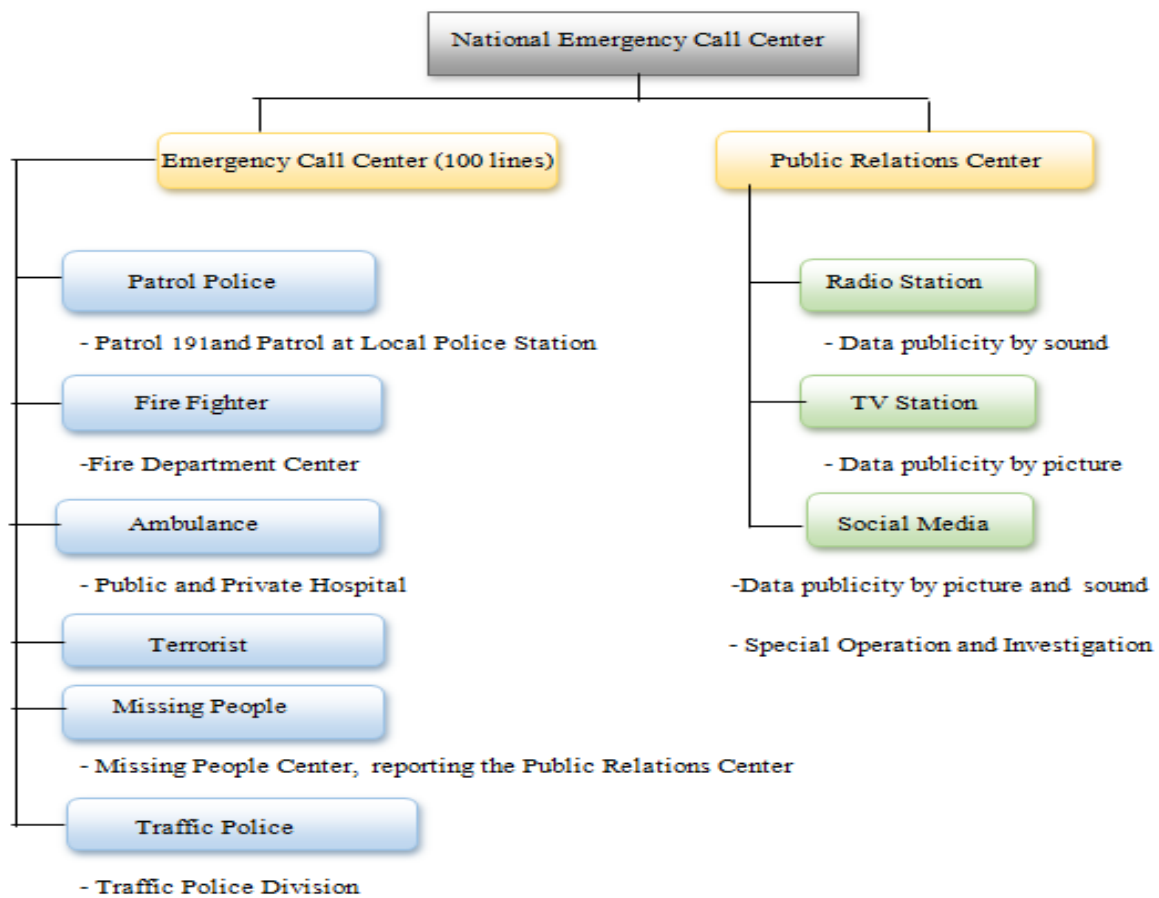
Model of National Emergency Call Center

Figure 1 The Model of National Emergency Call Center

This model is an development of current Emergency Call Center into "National Call Center" extremely necessary for the divisions to integrate functions as stated in the model regarding emergencies, aiming for the most effective service to the people. will be to find a way to solve other issues such as unclear provisions and the lack of appropriate laws, the government should plan for the development of "National Call Center" in the long run.

The research findings in this study illustrate issues with the current emergency call system, while examining effective strategies from foreign systems. Given the analysis of international programs as well as collection of quantitative and qualitative data, it is recommended that the government support the development of a National Emergency Call Center through legislation and new regulations. Thailand needs an integrated, streamlined emergency response system that both simplifies reporting for the public while allowing for coordinated efforts on the part of emergency personnel to address situations. The government needs to increase budgetary spending to modernize the technology and support qualified personnel to improve the efficacy and efficiency of the system.

The Royal Thai Police should be considered from the recruitment of the police officer, and training them to be expert in handling radio communication, as well as ability to convey the message to the operation officers, including the Metropolitan police financial plan to acquire equipment for the operation. Budget must be allocated and managed functionally and the Metropolitan Police Bureau should be the main organizer to co-ordinate with relevant agencies such as Fire Department, Hospital, Rescue Unit, Bangkok Administration and other

agencies dealing with emergencies with maximum efficiency. As for hiring outsource to take the call, the Metropolitan Police Bureau or the Patrol and Special Operation Division should assess the performance as the performance indicator of outsource, in order to put the right person on the right position,

The National Emergency Call Center should be empowered to store data by requesting all units in suppression emergencies making then report on how to close such cases and the outcomes of the operation in order to prepare statistic and correct the flaws. Moreover, the Metropolitan Police Bureau should develop the News Center or Emergency Call Center 191 to be "One Stop Service" by the developed National Emergency Call Center could announce necessary information and emergencies to the people at once.

Conclusion

The Metropolitan Police Emergency Call Center was established in Bangkok 40 years ago. In that time, the Emergency Call Center has failed to modernize with the times and has become outdated and less effective as a result. Buildings, facilities, technology and strategies all need to be evaluated and improved into to allow for better more reliable emergency response in Thailand. Individuals need to be properly trained and have access to the necessary technology and information vital to the successful response to emergencies. This can be brought about by improved technology, integrated databases, streamlined procedures and increased budgets for personnel and technology. The emergency response system should be integrated under a larger, centralized national system, the "National Emergency Call Center," to improve efficacy and collaboration between departments and agencies.

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