電子社區賦權以提高緊急情況下的生存率
：研究社區接受預防和應對緊急犯罪系統

E-Community empowerment to improve the survival rate in danger situation: a study of community acceptance in prevention and response of emergency crime system

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Abstract

The technology has developed extremely fast and used widely today, the advance technology has move people closer and faster by eliminating barriers such as time, language, and etc. made a huge change in the system of business, industrial, sell and purchasing, and how people interact. However, danger prevention and response haven't maximized its capability to ensure the survival chance of the victims. The purpose of this work will focus on shortening time to prevent and the response of emergency situation based on community empowerment to improve the survival rate for citizens. This work has allowed the government to improve security in advanced, the system in this work will use citizen's community in surrounding location to help manage the emergency situation Using the Internet of Things (IoT) make it more convenient and effective to detect the probability of emergency. The empowering community also reduce response time to get into the location of the incident for immediate action. Maximizing the survival rates of the victims. This work proposed a system through devices to be able to send an immediate notification to other citizens surrounding area based on simple activation method and sensor data to recognize and analyse the situation and location of the carrier in a real-time event. Technology acceptance model is used to uncover the question of will the society perceived usefulness of the system. If yes, will society accept the system and adapt to empower society. And what kind of society will affect the attitude towards the use of the system.

Keywords: emergency crime system, response and prevention, community empowerment, technology acceptance model

1. INTRODUCTION

1.1. General background

Healthcare sector to manage and rescue the victim. Especially in 3rd world country with the increase of advanced technology today, it improves the system in many aspects, it changes the way of system works, it brings everything faster and more efficient by its ways. The development of IoT plays an important role in it. In addition, the advanced of IoT has allowed users to carry the device with more convenience and ability to collect data from the users, moreover, IoT becomes capable to interact with the sensor from the users. There has been a lot of study and application applied in this area, in many sectors of industry and organization used it to improve efficiencies of the process to achieve their goals.

In healthcare and security sector, there are various study provides IoT based devices combined with a sensor that conduct real-time monitoring and data collection. Smartphone and other wearable devices provide technology to collect and use information such as location, heartbeat, acceleration, blood flow and other personal information of the users. However, it is important to ensure the data can integrate properly with the system. various studies are looking for a solution to it. A system

for healthcare service with continuous collection and evaluation of multiple vital signs, long-term healthcare, and a cellular connection to a medical center in the emergency case and it transfers all acquired raw data by the internet in the normal case.

There also a study aiming for the security sector. A proposed system called Ubiquitous crime prevention system (UCPS) for a safer city (Moon et al., 2014)[1]. The system relies on analyzing pedestrian behavior, forecasting the crime based on a statistical analysis of factor that affects crime and CCTV. showing the location with a high probability of crime, it utilizes internet or smartphone and provides local crime information to help aware people of the dangerous place.

In this study, we propose a system for security adopting the recent technology used in healthcare sector into security sector allowing the users to send immediate notification automatically to the surrounding area in order to get immediate help and assistance while in danger situation. The idea of this system based on the extremely fast development of IoT and E-commerce in the last 5 years. The advantage of e-commerce has changed the way how people purchase and selling products and services faster and easier to get to their target customer, eliminate the time, language, and geographic barrier. From that point, however, there is no system that adopts the advantage of e-commerce into the security sector yet. The system proposes adopted from recent research using IoT based devices combined with GPS sensor, HR sensor, blood pressure sensor, electrocardiograms (ECGs), and SPO2 sensor for automatic activation and combined with manual activation method with the devices. The sensor will collect raw data from the user's body and Integrated with wearable devices of the users, and shares the notification through the internet. The system proposed required surrounding to have the application in their devices in order to get a notification. The role of a sensor in this system is to determine whether the user needs immediate help from others in case of an emergency situation. The wearable device will translate the raw data collected from sensors and users command into action, in this case, the action is a real-time notification to surrounding and the domestic authorities (e.g., police, hospital, and/or firefighter) and surrounding communities. (Figure 1).

We adopt the sensor technology for our system from Bio-Signal sensors proposed from recent research about "an emergency telemedicine system based on wireless communication technology" (Kyriacou et al., 2006)[2] That hereafter adopted by other research. It provides efficient solution that can continuously acquire four different physiological signs, for example, ECG, SpO2, temperature, and blood pressure and further relayed them to an intelligent data analysis scheme to diagnose abnormal pulses for exploring potential chronic diseases "a wireless emergencies telemedicine system for patient monitoring and diagnosis" (Abo-Zahhad et al., 2014)[3]. The bio-signal sensors are commercial monitors used for the acquisition of bio-signals and Huffman algorithm for ECG signal compression, GSM, GPRS, POTS, or satellite. Based on this sensor explained above we combined it with the architecture network proposed from the research of "A Novel Emergency Healthcare System for Elderly Community in Outdoor Environment" (Cao and Zhan, 2018)[4]. From this model, we propose a modification to enable the surrounding area to get a notification both automatically and manually.

The statistics data from UNODC (United Nation Office on Drugs and Crime) [5] calculated, In 2013 until 2016 period the number of victim of intentional homicide relatively high in most of place around the world, with South America placed number one the highest intentional homicide occurred from 2013 until 2016 period with the highest number of 99,175 victims in 2016 following Southern-Asia in number two with the highest number of 68,193 victims in 2014 and central America in number three with the highest number of 41,045 victims in 2016. Regardless of any other factor of terrorist attack, war, and conflict occurred The number of victims extremely high. Focus on south-eastern Asia, Philippines reported 11,385 victims in 2016, following Thailand with 2,894 victims in 2013 and slightly decrease the number with 2,229 victims in 2016, and Indonesia the third-placed with 1387 in 2013 and slightly decrease with 1292 in 2016. In southern Asia, India surprisingly had a huge number with 47,356 victims in 2014. Looking from statistic above a country like Philippine, Thailand, Indonesia, and India consecutively, at least 32, 8, 4, and 130 people every day had become a victim of serious injury and/or death at that year. The fact that shown, proof that they had a serious problem with security in their country.

In this study we try to answer question of will the society able to perceived usefulness of the system and will the society accept and adapt to empower the system, and if yes, what kind of society will affect the attitude towards use of system, to answer that question, the experiment used technology acceptance model in order to find the positive result of the system with the objectives of understands society perceived usefulness towards system, understands how society acceptance of system , and understands attitude of society towards proposed system.

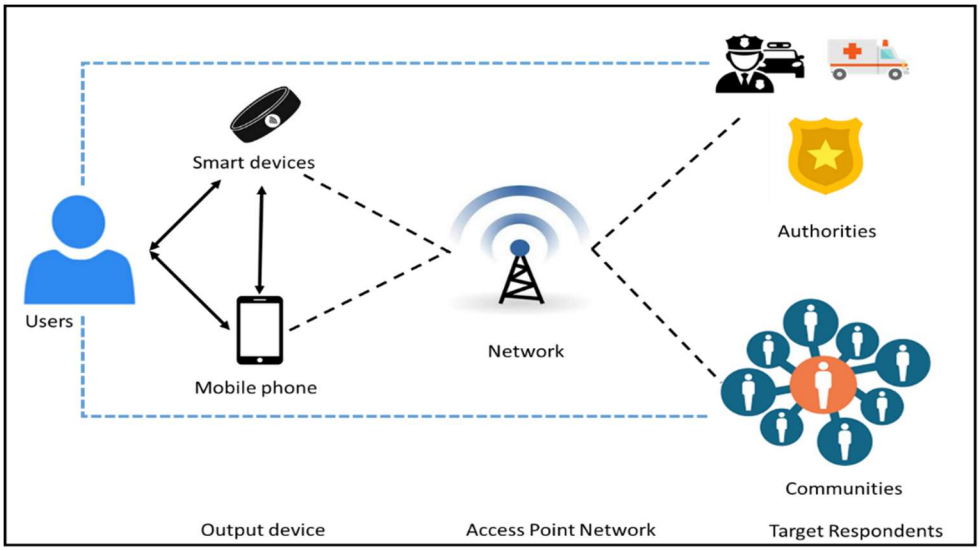

Figure 1. Architecture of proposed system using smart devices integrated with smartphone through the internet network in outdoor environment.

1.2. Devices Works

The devices will sense abnormal activity in the user's body through Bio-signals that will alert the users, authorities and the surrounding communities. In order to prevent error actions, the devices provided one button to enable users to interact and give the command to the devices. the detailed process as described in (figure 2).

Outside of our cognition, we assume there is four conditions with two errors that might happen. The first condition that the device activated alert while the users are in danger or an emergency situation, it shows no error and devices works properly. Thus, the users must not interface the devices and wait for the assistance arrived. The second condition that the device activated alert while the users are not in danger or an emergency situation, it shows error on the devices had occurred and we called it with error 1. The third condition that the devices deactivate alert while the users are in danger or an emergency situation, it shows error on the devices had occurred and we called it with error 2. The fourth condition that the devices deactivate alert while the users are not in danger or an emergency situation, it shows no error and devices works properly. In response to error 1 and error 2 that founded on the device, we provide the button that allows users to give command to the devices, for error 1 when the users are in danger while the device is not active, click the button once and the device will send alert immediately, meanwhile the devices will also give vibration notification to the user in order to avoid unintentional click on the devices, to fix it the users need to perform the same procedure as error 2. For error 2 when the users are not in trouble but the device activates the alert, click the button for 5 seconds to deactivate and the device will stop send an alert immediately.

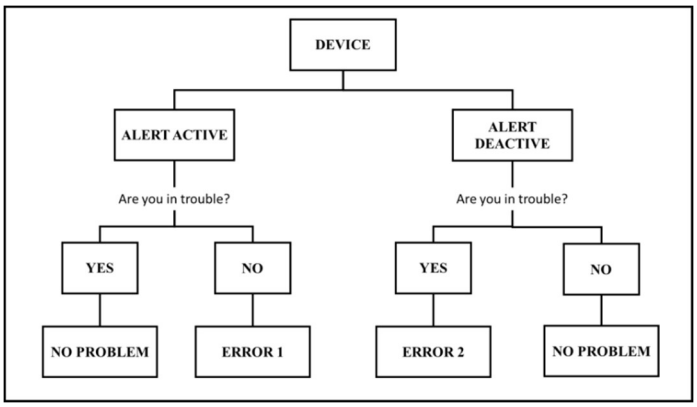

Figure 2. Type of conditions and errors of the device

2. LITERATURE REVIEW

2.1. Sensor Information

The number of a sensor in the internet of things (IoT) has increased explosively, in this study it is important to address the sensor's location in real-time to proceed immediate response regardless user's situation. A prototype BP and heart-rate monitoring system using WSNs, WSNs can interface with ECG, a sensor records the pathway of electrical impulses through the heart muscle, and can be recorded on resting and ambulatory subjects, or during exercise to provide information on the heart's response to physical exertion. Pulse-oximeters, and blood pressure monitors (BPMs) a system allows health personnel to monitor a patient's Blood Pressure and heart-rate from a remote location without requiring the physician to be physically present (Hande et al., 2006) [6].

Bio-signal sensor, such as ECG, SpO2, temperature, and blood pressure and further relayed them to an intelligent data analysis scheme to diagnose abnormal pulses for exploring potential chronic diseases. In the research of wireless telemedicine system, they can integrate the sensor unit, processing unit, and communication unit in one chip bounded to the patient's body called mobile-care unit. This will improve the patient's mobility and will not affect active daily life during monitoring. When an abnormal heartbeat that the doctor concerns are detected, the care unit transmits it to the server via GPRS network in real-time. The doctor at the server side could communicate with the patient also by using SMS if necessary. The proposed system also has a friendly web-based interface for medical staff to observe immediate vital signs for remote treatment which will give more mobility for medical staff (Abo-Zahhad et al., 2014)[3].

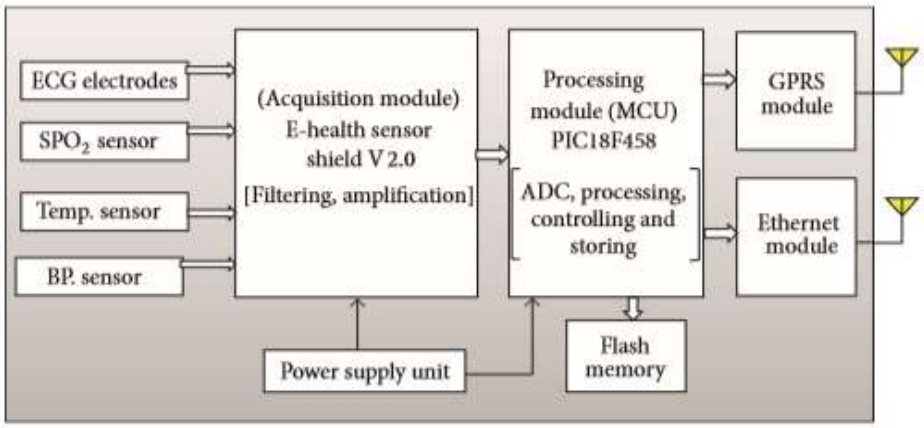

Figure 3. Mobile-care unit. Cited from Abo-Zahhad, M., Ahmed, S. M., and Elnahas, O. (2014). A wireless emergency telemedicine system for patients monitoring and diagnosis. *International journal of telemedicine and applications* 2014, 4.

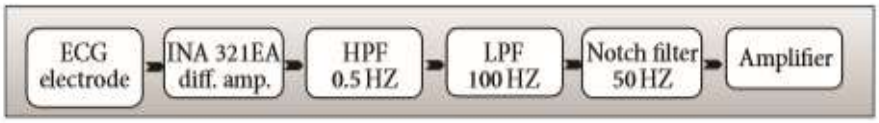

Figure 4. Block diagram of ECG acquisition hardware. Cited from Abo-Zahhad, M., Ahmed, S. M., and Elnahas, O. (2014). A wireless emergency telemedicine system for patients monitoring and diagnosis. *International journal of telemedicine and applications* 2014, 4.

2.2. Emergency Healthcare System

In emergency healthcare system research recently had developed an integrated the healthcare system and digital healthcare services to interfaces elderly citizens at the outdoor environment based on the unmanned aerial vehicle (UAV) and internet of things (IoT). The system using physical devices, wireless and wired networks, cloud, data center and smart terminal. The system provides real-time data to make it more efficient solution than the traditional healthcare system. the system gathered all status data through cloud and data center, then transfer analyzed data to the smart terminal (e.g., doctors, smartphone, and other smart terminal. The data gathered through forecasting and emergency devices such as, body sensor nodes, the intelligent bracelet, environment sensors, and other sensors form the forecasting devices. The forecasting devices mainly gather the data for the general case and forecast the health condition of the users. The emergency devices are responsible for the emergency situations such as heart attack, hypertension, and other acute diseases. The emergency devices include the mobile phone, the outdoor help system node, RFID cards, and other smart devices. The data collected stored in cloud and data center. (Hui-RuCao., 2018) [4]. From the emergencies devices communication layer is used to connected between smart devices to the hospital system. it uploads and delivers sensing data and other information. the communication media platform uses both the wired and wireless communication technologies. using a smart terminal, the related information and data can be display using messages, web pages or other application. From the described summary of The existing work only cover medical monitoring and transmitted to a specific person (family member and or doctor) the limitation in previous work is that when the family member is on distance or unable to respond immediately action, or abnormal condition such as crime occurred then the fatal result may happen. Thus, this paper proposes a system to overcome this limitation.

2.3. Crime Response System

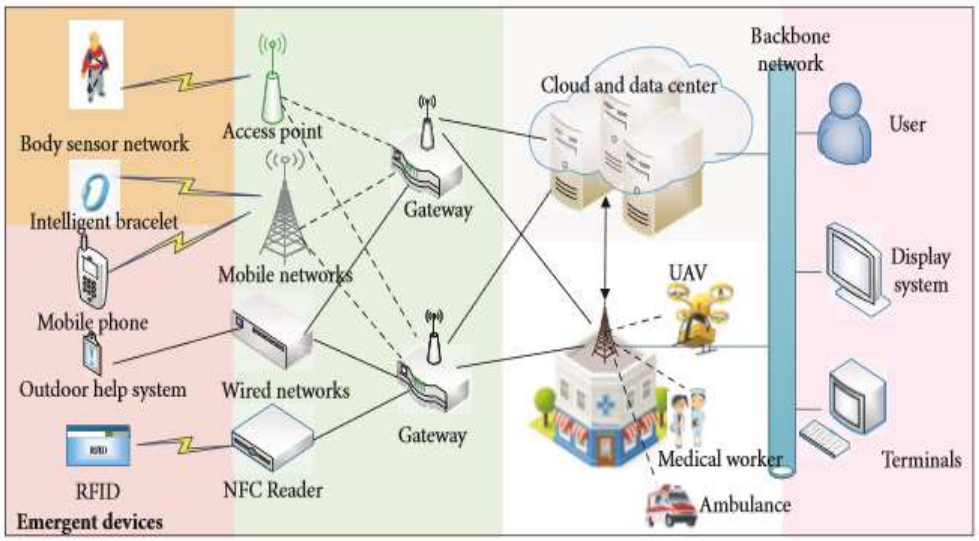

Figure 5. Architecture of network for senior citizen community in outdoor environment. Cited from Cao, H.-R., and Zhan, C. (2018). A Novel Emergency Healthcare System for Elderly Community in Outdoor Environment. *Wireless Communications and Mobile Computing* 2018.

A high population increase and rapid urbanization have emerged issues such as environmental problem. One of the problems is crime, small or big crime has threatened our lives or property. Managing a system to prevent and or response a crime is extremely necessary for nowadays. The recent development of a new system called "Ubiquitous crime prevention system" (UCPS) for a safer city (Moon et al., 2014)[1]. The system relies on analyzing pedestrian behavior, forecasting the crime based on a statistical analysis of factor that affects crime and CCTV. showing the location with a high probability of crime, it utilizes internet or smartphone and provides local crime information to help aware people of a dangerous place. For information, the authors briefly state that crime rates have increased by 3,4% on a yearly average over the last 30 years in Korea such as murder, robbery, and rape. In addition, according to the Asian Crime Index by Country 2018 Mid-Year, show a statistical crime in 5 highest population country. Shows how important this issue and necessary to find a better solution (Numbeo doo inc., Serbia)[7].

However, the system only provides information on recent crime in the surround area to make people aware, but it is not responding to the crime action at the time. Recent study reveals the relation between response time and crime detection in the UK, which the authors believe 10% increase in response time lead 4.6% decrease in likelihood to detect crime (Blanes i Vidal and Kirchmaier, 2017) [8]. In addition, the author also mention that Response time may affect by high density call delay and or distance from the station into location with the range of response is extremely wide with median 17 minutes and mean 73 minutes. The risk of long response time may lead to injury or death of the victim. Hence this work will focus on shortened time to prevent and the response of emergency situation based on community empowerment to improve the survival rate for citizens.

3. MATERIALS AND METHODS

3.1 Technology Acceptance Model

In this paper, the method using Technology acceptance model will expose the insight of how users come to accept and use this system, with a number of factors influence their decision and attitude towards use it. It presents control variable of how users perceived usefulness and ease of use of this new system. there are Output Quality and Response Quality as a control variable for perceived usefulness (PU), Self-Efficacy and Simple Operation as a control variable for perceived ease of use (PEOU), and Experienced problem, gender, and ages as a control variable for Attitude towards use (ATT). Perceived Usefulness (PU) and Perceived ease of use (PEOU) will influence Attitude Towards Use (ATT) and lead the model into Usefulness (PU) and perceived ease of use (PEOU) will influence attitude towards use (ATT) and lead model into Adoption intention (AI) and finally Application Usage (U).

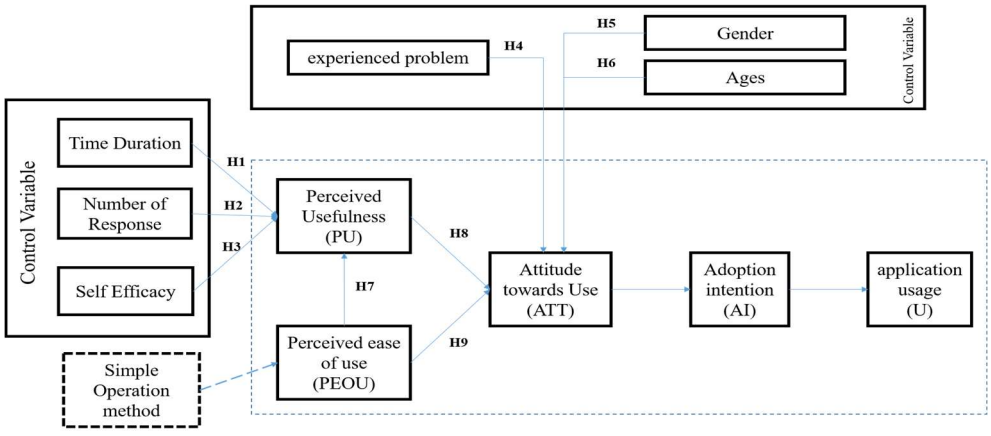

Figure 6. Technology Acceptance Model

3.2 Questionnaire

The data collection using questionnaire are applied for Indonesia society. Recently Indonesia is counted as the high annual crime committed country thus, the data collection will focus on the crime prevention and response system to make a positive impact. The target respondent for Indonesia from teenager ages under 18 until mature person over 30 for both men and women. The questionnaire contained a total of 14 questions, where 2 questions are a general question of ages and gender and 12 questions related to the topic of crime and danger prevention system. Question 1 intended to getting information about respondent status when out in public whether they go out alone or companies with their relative or private assistant. Question 2 refers to an average frequency of their weekly routine in public outside alone. Question 3 intended to getting information about their expression of the situation out in public alone. Question 4 intended to collect their experiences of danger/threat they faced or happened surround them and their relatives. Question 5 following Question 4 describe the kind of threat/danger happened, noted that one person may give more than one case of events. Question 6 intended to get information about the respondent's kind tools, device, and helps needed the most when faced threat/ danger. Question 7 refers to the opinion of the respondent about the usefulness of the system purposed. Question 8 refers to an attitude of the respondent into this new system whether they are going to use it or not. Question 9 intended to get information about the weakness of the system and kind of hesitation for the system in respondent minds. Question 10 intended to get information about what method is the best based on their preference to activate the device. Question 11 intended to get information about the respondent's willingness to help, and how much enthusiastic of society look at this type of system to empower them, whether it is the positive or negative response of acceptance. Question 12 following question 11 to describe the reason behind their resistance to helping others. About 300 respondents are responded and the data were collected. The data then analyzed by a statistical method using *IBM SPSS Statistics 22* software and the result was obtained.

3.3 Experimental site

The experiment conducted in 5 locations around Jakarta and surrounding location, located in "Pulo Gadung station, East Jakarta, Indonesia.", "Senen Station". East Jakarta, Indonesia.", "Kelapa Gading, North Jakarta, Indonesia.", "Kebayoran Lama, South Jakarta, Indonesia.", and "Bus Station Depok, Indonesia". The experiments were done by asking respondents to filled questionnaires and simulation.

3.4 Hypothesis

Time refers to the duration needed for people surrounding in order to get into the victim in danger location. We purpose H1 that state, faster time in rescuing victims will increase the usefulness of the system. The data of "time" collected by simulation performed, with help from local community consists of 7 people. The simulation performed on the spot in several locations located in "Pulo Gadung station, East Jakarta, Indonesia.", "Senen Station". East Jakarta, Indonesia.", "Kelapa Gading, North Jakarta, Indonesia.", "Kebayoran Lama, South Jakarta, Indonesia.", and "Bus Station Depok, Indonesia". while we interviewed respondent to fill the questionnaire. The seven people who help this simulation we called them agents. The data collected are the fastest time that one of the seven agents arrived at the respondent location. All the seven agents are located and moving in a random location around 500 meters from the respondent target point. we used Google maps in order to identify respondent locations. The seven agents were moving by foot in fast-walk and running speed after the target points are identified. Right after arrived at the target point the time is recorded. Then we compare the data of the time recorded above with the data of "Do you think this application is useful while you are in danger situation?".

We assume that the people willing to help sometimes do not notice that someone near needed help, this system allow them to notice such a condition. By allowing them to notice sudden needs around them and their willingness to help will lead them into perceived usefulness of the system, and by the time of positive response and enthusiastic of helping other, the more society will believe and rely on this system. We propose H2 that state more number of respond from society will increase the

usefulness of the system. we proof the hypothesis using the questionnaire method with a specific question that asked: “if there are other people nearby who need your help, would you willing to help?”. We compare the data of the question mentioned above with the data of “Do you think this application is useful while you are in danger situation?”. We asking 300 random respondents about this question. With the purpose of getting an insight into how many respondents are willing to take a part of this system in order to empower the society.

Self-efficacy refers to a people's beliefs about their capabilities to achieve goals and personal judgment of how well one can execute courses of action required to deal with prospective situations (Bandura, 1997)[9]. Self-efficacy beliefs determine how people feel, think, motivate themselves and behave. Such beliefs produce these diverse effects through four major processes: performance outcomes, verbal persuasion, vicarious experience, and psychological feedback. in this research, we define self-efficacy based on psychological feedback oriented. The reason behind this is because performance outcomes and vicarious experience data can’t be obtained due to the similar system aren’t touch Indonesian society yet. Thus, these two major processes are out of our consideration. verbal persuasion also out of our consideration, the reason for it because the goal is finding insight into whether this system is suitable and acceptable for the society or not. Thus, we do not want to do any type of persuasion and try to minimize as low as possible any type of persuasion in our questionnaire.

Self-efficacy based on psychological feedback is “people experience sensation from their body and how they perceive this emotional arousal influences their beliefs of efficacy” (Bandura, 1997)[9]. In order to gain this information, we set a specific question that asked: “If you stuck in danger situation alone what you need the most?”. H3 state Increasing in self-efficacy will increase perceived Usefulness of the system. We compare the data of the question mentioned above with the data of “Do you think this application is useful while you are in danger situation?”. We asking 300 random respondents about this question. With the purpose of getting an insight into their psychological feedback about what they urgently need the most if they were in that situation.

A number of experienced problems refer to the user’s experience of faced a certain kind of problem that may be solved using this new system. we assume that the more people had faced certain danger or emergencies situation will increase the likelihood of people using this system. H4 state that Increasing number of the experienced problem will increase attitude towards the use of the system, we proof the hypothesis using the specific question of “Have you/your colleagues ever faced a threat in public or danger happened around you/them?”. We compare the data of the question mentioned above with the data of question “The device will able to send help alert to the nearest people while you are in danger situation. Would you use it?”. We asking 300 random respondents about this question with the purpose of getting information about how many people had experienced thread or danger in our sample.

The system we propose does not specifically refer to a one of either gender nor group of ages. however, we cannot avoid the fact that different gender and ages may have a different attitude towards this system. we assume that woman will have more approach towards this system. That because a woman is most likely be a target of violent and criminal. The mindset that women are frailer than a man makes woman most likely to become a target victim. The other assumption that people over 30 will less likely to use this system difference in their salary, at that ages people are most likely to stable in their financial status and most of them have cars that more conveniently safe than a motorcycle but in other hands they may use the system to their own child. With people ages between 18-30 are just started to develop their financial that may take public transportation or motorcycle for their daily routine depends on their family financial status, this kind of system is likely most suitable to them. For people under 18 majorities, their financial are supported by their parents so particularly the decision of using this kind of system may have influenced by their parents or colleagues. Our H5 and H6 consecutively state that gender and ages will influence attitude towards the use of the system. to proof this assumptions, we collect the data about their gender and age to compare with their answer of the question “The device will able to send help alert to the nearest people while you

are in danger situation. Would you use it?". We asking 300 random respondents about this questions with the purpose of getting an insight of whether gender ages are influenced the attitude towards the use of the system.

The simple method refers to a way of the users in performing this device. The purpose of the simple method is to allow users to perform it quickly and for all kind of users e.g. kids, elderly, and disables. H7 state Increasing in Perceived Ease of Use Will increasing Perceived of Usefulness, we proof the hypothesis using the specific question of "In your opinion, which method of activation is the best suited for this device?". We compare the data of the question mentioned above with the data of "Do you think this application is useful while you are in danger situation?". The question provides 3 choices of simple method including one-click button, sound alert, and calling via smartphone. We also provide an open answer to collect other possible methods. We asking 300 random respondents about this question with the purpose of getting insight based on their preference of the what kind of method is the simplest and easiest for them to perform.

Perceived of usefulness refers to a respondent opinion about the new system, the data collected from the question "Do you think this application is useful while you are in danger situation?". we assume that respondent's answer of this question will describe the usefulness of the system, we compare the data from the question above with the question of "The device will able to send help alert to the nearest people while you are in danger situation. Would you use it?". In H8 we assume that increasing respondent opinion of usefulness will increase the likelihood of using this system.

Perceived ease of use refers to a respondent preference of method used for the new system device. the data collected from the question "In your opinion, which method of activation is the best suited for this device?". We assume that the answer to this question will describe the ease of use of the system based on respondent preferences. We compare the data from the question above with the question of "The device will able to send help alert to the nearest people while you are in danger situation. Would you use it?". Our H9 state that, respondent preference will lead into the likelihood of using this system.

4. RESULT

4.1 Questionnaire Result

From the data collected from 300 respondents, we run descriptive statistics and obtained insight that state average of the fastest time for agents to get into respondent's target point is 64.4599 or 65 seconds, With the fastest recorded in 30.90 seconds and the longest takes 111.60 seconds (Table 1). From a total of 300 respondents, 100 or 33.3% are male and 200 of 66.6% are female (Table 2). Ages of respondent varied under 18 with 60 or 20% of total respondents, between 18 and 30 with 204 or 68% of total respondents, and over 30 with 36 or 12% of total respondents (Table 3). 282 or 94% of respondents ever out in public alone, and 18 or 6% answered no (Table 4). About 107 or 35.7% of respondents answered rarely (once a week) being in public outside alone, 76 or 35.3% of respondents answered sometimes (2-3 times a week) being in public outside alone, and 117 or 39% of respondents answered often (almost every day) being in public outside alone (Table 5). The opinion of safeties in public outside alone reveals 146 or 48.7% respondents answer it is not safe and 154 or 51.3% respondents answer it is safe (Table 6). About 169 or 56.3% of total of 300 respondents and/or their relations had faced threat/danger the rest of 131 or 43.7% respondents had not faced threat (Table 7). from 169 respondents or their relatives who had faced thread total of 187 threats are collected and grouped into several type of threats, 86 threat of burglar, 42 threats of sexual harassment, 35 threats of robbery, 14 threats of murdered, 4 threats of brutal fight, and 3 threats of bullying and hypnotized each are counted (figure 7). Based on respondent's preference of tools/help 211 or 70% of respondent answered they need help from other, 37 or 12.3% answered they need police, 25 or 8.3% answered they need nothing, 16 or 5.3% answered they need weapon, and 11 or 3.7% answered other (Table 8). Based on respondent's opinion about usefulness of the system, about 205 or 68.3% answered "Yes", 84 or 28% answered "Maybe" and 11 or 3.7% answered "No" (Table 9). from the responses of respondents who willing to use the system about 262 or 87.3% answer "Yes" and 38 or 12.7%

respondents answered “No” (Table 10). From the respondent’s point of view, about 67 responses about the weakness of the system are collected. 28 responses state “The nearest person could be the criminals too” 19 responses state “Unsure of Device”, 8 responses state “prank/spam”, and 12 responses state “other” as a weakness of the system (Table 11). Based on respondent preference of system based Method, 198 or 66% of respondents chose “one-click button”, 69 or 23% respondents chose “sound alert”, 33 or 11% respondents chose “via cellphone” as their preference of method, and no response collected on the “other” method suggested by the respondent (Table 12). The response of a number of respondents who willing to help other are collected as 173 or 57.7 % answered: “Yes”, 117 or 39% answered, “Maybe” and 10 or 3.3% answered “No” (Table 13). Following the previous question, the reason that resists respondents to help other, 102 responses are collected. about 49 state it is “Too dangerous”, 27 states it is “Authority duty”, and 26 states “other” reasons (Table 14).

4.2 Result Analysis

From the data collected by descriptive statistics, the analysis continues in looking for a correlation between data. The method used cross-tabulation combined with Chi-Square and risk estimation analysis and correlation bivariate matrix using *IBM SPSS Statistics 22* software. Cross-tabulation fits our model for comparing the result of responses with a nominal scale (yes/no) answer. At the same time, cross-tabulations help us to explore the more hidden relationship between items in our survey data that might be missed by the correlations matrix caused of nominal scale (yes/no) answer. Nominal scale refers to placing of data into categories, without any order or structure. In our research activities, a yes/no survey has no order and there is no distance between “Yes” and “No”. however, we still combine cross-tabulations with correlation matrix in order to make a correlation between data clearer. The data of cross-tabulation run using chi-square for 2x3 and 3x3 data and using a risk estimation model for 2x2 data. We also merge cell within some variable that count less than 5, this based on 5 rules on chi-square that each cell at least counts more than 5. After merging cell there is a chance that the cell becomes 2x2 and chi-square become accurate to use, thus we used risk estimation analysis for those variable.

4.2.1 Hypothesis 1, the Faster time will likely lead to perceived usefulness of the system

To proof the 1st hypothesis, we used the graph for time and compare it with question 7 of the usefulness of the system. The graph shows that respondents are more likely to answer “yes” in terms of the usefulness of the system under 80 seconds, about 197 of 205 total respondents answered “Yes” for the duration under or equal 80 seconds. for time over 80 starts to have respondents answered “No” in terms of the usefulness of the system, a total of 11 respondents answered “No” fall for duration over 80. respondents answered “Maybe” or not sure in terms of usefulness of the system relatively spread equal, but have more frequency in between 70 and 90 second, about 42 of total 84 respondents answered “Maybe” falls between 70 seconds until 90 seconds duration, 16 over 90 seconds and 26 under 70 seconds (figure 7). The correlation matrix shows negatively significant by -.543 points in correlation at 0.01 significant level (Table 21). From the information obtained we can conclude that faster time durations more likely lead into respondents perceive the usefulness of the system and reduce in time duration will increase perceived usefulness of the system.

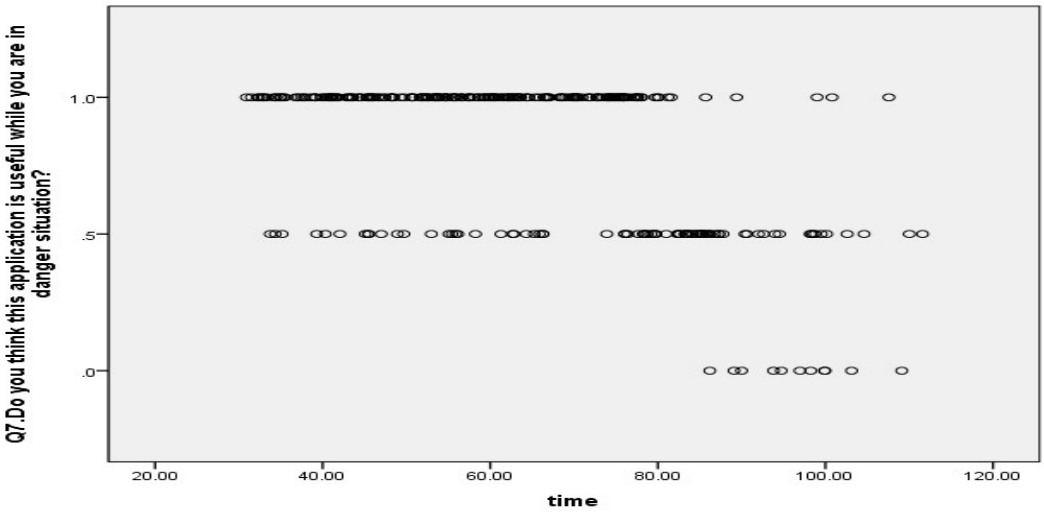

Figure 7. Result of time needed for a person to get into respondent point compared with question 7 of usefulness of the system. 1.0 refers to "Yes" answer, .5 refers to "Maybe" answer, and .0 refers to "No" answer.

Table 1. cross-tabulation of perceived usefulness of the system and time duration Count

		Time duration		
		Under the 80s	Over 80s	Total
Do you think this application is useful while you are in danger situation?	No	0	11	11
	Maybe	39	45	84
	Yes	197	8	205
Total		236	64	300

4.2.2 Hypothesis 2, People who willing to help more likely lead to perceived usefulness of the system

To proof 2nd hypothesis, we used cross-tabulation analysis combined with risk estimate analysis for variables usefulness of system and respondent's willingness to help. The result shows 146 of total 173 respondents who willing to help beliefs the perceived usefulness of the system, 24 answered maybe, and the rest of 3 respondents believes there is no perceived usefulness of the system. for a total of 117 respondents who answered maybe they willing to help 50 believes the perceived usefulness of the system, 59 not sure of the usefulness and the rest of 8 respondents believes there is no perceived usefulness of the system. for a total of 10 respondents who not willing to help 9 respondents perceived the usefulness of the system and 1 respondent not sure of it. From the data obtained, although we have 3x3 cross-tab, there are at least 3 cells have expected counts less than 5. Therefore, chi-square method can't be performed. To eliminate the issue, we merged cell less than 5 together into one category. Assume that respondents who answered maybe equally counted as no answer, this based on skeptic point of view that respondents who not sure about the system or not sure about willingness to help at the end they will likely reject or refuse to accept the system or help other. Then, we obtained new data with 2x2 cross-tab (Table 2).

We continue analysis used chi-square, the result we obtained shows a degree of freedom equal 3 with x^2 = 48.709. there is significant evidence against ithe ndependent variable, the chi-square test has very small p-value (less than .001) (Table 3), but looking to cross-tab it seems that the value looks unreasonable. to confirm it, we run additional analysis used risk estimate for 2x2 cross-tab.in this case, the odds ratio shows that people who willing to help has 6.232 times the odds of perceived usefulness of system than someone who not willing to help. The confidence interval shows that rthe atio for cohort usefulness is 1.817, which is significant more than 1 at alpha 0.25 level (Table 4). From the information obtained we can conclude that people who willing to help more likely lead into perceive uthe sefulness of the system.

Table 2. Cross-tabulation of Usefulness of the system and willingness to help

			usefulness		
			Yes	No	Total
willingness to help (merged)	Yes	Count	146	27	173
		Expected Count	118.2	54.8	173.0
		Residual	27.8	-27.8	
	No	Count	59	68	127
		Expected Count	86.8	40.2	127.0
		Residual	-27.8	27.8	
Total		Count	205	95	300
		Expected Count	205.0	95.0	300.0

Table 3. Chi-Square Tests between Usefulness of the system and willingness to help

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	48.709[a]	1	.000		
Continuity Correction[b]	46.971	1	.000		
Likelihood Ratio	49.327	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	48.546	1	.000		
N of Valid Cases	300				

a. 0 cells (.0%) have expected count less than 5. The minimum expected count is 40.22.

b. Computed only for a 2x2 table

Table 4. risk estimate between Usefulness of the system and willingness to help

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for willingness to help (yes / no)	6.232	3.637	10.681
For cohort usefulness = yes	1.817	1.491	2.213
For cohort usefulness = no	.291	.199	.427
N of Valid Cases	300		

4.2.3 Hypothesis 3, Self-efficacy will likely lead to perceived usefulness of the system

To proof 3rd hypothesis, we used cross-tabulation analysis combined with chi-square analysis for variables usefulness of system and respondent's preference of tools/help. The result obtained from cross-tabulation shows from a total of 205 respondents who perceived the usefulness of the system 154 respondents preferred help from other is what they need the most when faced danger situation. while the other preferred police, gun, and other by 26, 13, and 4 consecutively, and 8 respondents answered need nothing. For respondents that not sure with the usefulness of the system from total 84 respondents, 50 preferred help from other. while the other preferred police, other, and gun by 10, 7, and 3 consecutively, and 14 respondents answered need nothing. From a total of 11 respondents who believe there is no usefulness of the system 7 preferred help from other and 1 respondent preferred police, while 3 respondents need nothing. From the data obtained, although we have 3x5 cross-tab, there are 6 cells have expected counts less than 5. Therefore, chi-square method can't be performed. To eliminate the issue, we merged cell less than 5 together into one category. Assume that respondents who answered police, gun, other, and nothing equally counted as no need help from others (labeled as other merged). this based on the topic of community

empowerment, the other group that no relation with community power can be classified as one group. Then, we obtained new data with 2x3 cross-tab (Table 5). Although still there is a cell have expected counts less than 5 caused of a low number of response in that choice, chi-square analysis can be performed due to the minimum expected count is 3.26, while 1 smaller than 3.26. The result obtained from chi-square analysis shows a degree of freedom equal 2, $x^2 =$ 7.193, and p-value is 0.027 with 95% significant level (Table 6). The critical value in this case fixed at point 5.991, determined based on Chi-square distribution table with degrees of freedom (df) equal to 2 and p-value equal to .05, then we obtain critical value equal to 5.991. value of $x^2 =$ 7.193 greater than 5.991 (critical value) and p-value smaller than significance level (.027 <.05). based on this evidence, we can conclude that there are relations between usefulness and tool/help preferred and proof our hypothesis that, Self-efficacy will likely lead into perceived usefulness of the system.

Table 5. Cross-tabulation of Usefulness of the system and type of respondent's preference of tools/help

			Usefulness			
			No	Maybe	Yes	Total
Preference of tools/help (merged)	Other	Count	4	34	51	89
		Expected Count	3.3	24.9	60.8	89.0
		Residual	.7	9.1	-9.8	
	Help from other	Count	7	50	154	211
		Expected Count	7.7	59.1	144.2	211.0
		Residual	-.7	-9.1	9.8	
Total		Count	11	84	205	300
		Expected Count	11.0	84.0	205.0	300.0

Table 6. Chi-square tests of Usefulness of the system and type of respondent's preference of tools/help

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.193[a]	2	.027
Likelihood Ratio	6.999	2	.030
Linear-by-Linear Association	5.875	1	.015
N of Valid Cases	300		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 3.26.

4.2.4 Hypothesis 4, Experienced threat will influence attitude towards the use of the system

To proof the 4th hypothesis, we used cross-tabulation analysis combined with risk estimate analysis for variables attitude towards use and respondent's experience threat. The result obtained from cross-tabulation shows from a total of 169 respondents experienced threats 157 answered willingness to use the system and the rest of 12 respondents answered they have no willingness to use. From a total of 131 respondents had not experienced any threat 105 respond they have the willingness to use the system and the rest of 26 answered they have no willingness to use (Table 7). From the data obtained, we run both risk estimate and Chi-square method for a 2x2 table. However, we prefer to use risk estimate method as of our based evidence to find odds ratio and to find correlation and significance. The result obtained from Chi-square analysis shows a degree of freedom equal 1, with $x^2 =$ 10.839, and p-value is .001 with 95% significant level (Table 8). The critical value in this case fixed at point 3.84, determined based on Chi-square distribution table with degrees of freedom (df) equal to 1 and p-value equal to .05, then we obtain critical value equal to 3.84. value of $x^2 =$ 10.839 greater than 3.84 (critical value) and p-value smaller than significance level (.001 <.05). based on this evidence we may make a conclude that there are relations between variable. However, we want to ensure our statement with risk estimates analysis. The result gained from risk estimates table shows that, odthe ds ratio of people who experienced threats has 3.240 times the odds of willing to use the system than someone who had not experienced threat. The confidence interval shows that rathe tio for cohort is 1.898 which is greater than 1 at alpha 0.25 level, so it is significant (Table 9). From the information obtained we can conclude that there is a correlation between respondent's experienced of threat and their decision of willingness to use the system, that prof our

hypothesis that Experienced problem will influence attitude towards us the of the system.

Table 7. Cross-tabulation of attitude towards use and respondent's experienced threat

			Willingness to use		
			Yes	No	Total
Experienced threats	Yes	Count	157	12	169
		Expected Count	147.6	21.4	169.0
		Residual	9.4	-9.4	
	No	Count	105	26	131
		Expected Count	114.4	16.6	131.0
		Residual	-9.4	9.4	
Total		Count	262	38	300
		Expected Count	262.0	38.0	300.0

Table 8. Chi-square tests of attitude towards use and respondent's experienced of threat

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	10.839[a]	1	.001		
Continuity Correction[b]	9.717	1	.002		
Likelihood Ratio	10.845	1	.001		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	10.803	1	.001		
N of Valid Cases	300				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 16.59.

b. Computed only for a 2x2 table

Table 9. Risk estimate between attitude towards use and respondent's experienced threat

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio experienced threat (Yes / No)	3.240	1.565	6.704
For cohort Willingness to use = Yes	1.898	1.176	3.062
For cohort Willingness to use = No	.586	.451	.761
N of Valid Cases	300		

4.2.5 Hypothesis 5, Gender will influence attitude towards the use of the system

To proof 5th hypothesis, we used cross-tabulation analysis combined with Chi-square analysis for variables Gender and willingness to use the system. The result obtained from cross-tabulation shows from a total of 200 Female respondents 90% or 180 of it answered they willing to use the system and 20 of them answered they had no willingness to use the system. from a total of 100 Male respondents, 82% or 82 of it answered they willing to use the system and 18 of them answered they had no willingness to use the system (Table 10). The Chi-square test shows that degree of freedom equal 1, with $x^2 =$ 3.857, and p-value is .05 with 95% significant level (Table 11). The critical value in this case fixed at point 3.84, determined based on Chi-square distribution table with degrees of freedom (df) equal to 1 and p-value equal to .05, then we obtain critical value equal to 3.84. in this case, value of $x^2 =$ 3.857 just slightly greater than 3.84 (critical value) and p-value is exactly equal with the significance level (.05). in this case, there is a hesitation in decision making of reject or take H0. When we looking into correlation matrix the value is .113 which is relative small number, but the test state that correlations is significant at 0.05 level (2-Tailed) (Table 21). Still, we cannot make any decision about the result yet. As we know, Chi-square test is used to rounded the value, the question is whether the value is rounded to the lower level or upper level. then we try to calculate the p-value based on the chi-square table, the exact p-value of 3.857 is 0.049540 which is slightly less than critical value. based on this evidence, although there are small relations between both variable gender and attitude toward use the system the relation still proven, thus reject H0. So we can conclude that, there is small correlation between gender and attitude toward use and there is a weak influence of gender in affecting the decision of use with female gender is slightly willing to use the system than a male.

Table 10. Cross-tabulation of respondent attitude towards use and gender

			gender new		
			Female	Male	Total
Willingness to use	Yes	Count	180	82	262
		Expected Count	174.7	87.3	262.0
		Residual	5.3	-5.3	
	No	Count	20	18	38
		Expected Count	25.3	12.7	38.0
		Residual	-5.3	5.3	
Total		Count	200	100	300
		Expected Count	200.0	100.0	300.0

Table 11. Chi-Square Tests of respondent attitude towards use and gender

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.857[a]	1	.050
Continuity Correction[b]	3.168	1	.075
Likelihood Ratio	3.689	1	.055
Fisher's Exact Test			
Linear-by-Linear Association	3.844	1	.050
N of Valid Cases	300		

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.67.
b. Computed only for a 2x2 table

4.2.6 Hypothesis 6, Ages will influence attitude towards use of the system

To proof 6th hypothesis, we used cross-tabulation analysis combined with Chi-square analysis for variables Ages and willingness to use the system. The result obtained from cross-tabulation shows from total of 60 respondents under 18 years' old 52 of it answered they willing to use the system and 8 of them answered they had no willingness to use the system. from total of 204 respondents ages between 18 until 30 years' old 181 respondents answered they willing to use the system and the rest 23 of them answered they had no willingness to use the system. from total of 36 respondent age over 30 years' old 29 of them answered they willing to use the system and 7 of them answered they had no willingness to use the system (Table 12). From the Chi-square test we obtained information of degree of freedom equal 1, with $x^2 =$ 1.876, and p-value is .319 with 95% significant level (Table 13). The critical value in this case fixed at point 3.84, determined based on Chi-square distribution table with degrees of freedom (df) equal to 1 and p-value equal to .05, then we obtain critical value equal to 3.84. In this case, value of $x^2 =$ 1.876 smaller than 3.84 (critical value) and p-value is 0.319 greater than significant level (0.05) which is gave strong evidence that support H0 and failed to reject H0. From this evidence we can conclude that there is no relation between ages and willingness to use the system and our 6th hypothesis are proved wrong.

Table 12. Cross-tabulation of respondent attitude towards use and ages Count

		Ages			
		Under 18	18 - 30	Over 30	Total
Willingness to use	No	8	23	7	38
	Yes	52	181	29	262
Total		60	204	36	300

Table 13. Chi-Square Tests of Cross-tabulation of respondent attitude towards use and ages

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.876[a]	2	.391
Likelihood Ratio	1.708	2	.426
Linear-by-Linear Association	.399	1	.528
N of Valid Cases	300		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 4.56.

4.2.7 Hypothesis 7, Perceived ease of use will influence perceived of usefulness

To proof 7th hypothesis, we used cross-tabulation analysis combined with chi-square analysis for variables usefulness of system and respondent's preference of method. The result obtained from cross-tabulation shows from a total of 205 respondents who perceived the usefulness of the system 137 respondents preferred one-click button is the best method of system, while the other preferred sound alert and via cellphone by 43, and 25 consecutively. For respondents that not sure with the usefulness of the system from total 84 respondents, 55 of them preferred one-click button is the best method of system, while the other preferred sound alert and via cellphone by 23, and 8 consecutively. From a total of 11 respondents who believe there is no usefulness of the system 6 respondents preferred one-click button is the best method of system, while the other preferred sound alert and via cellphone by 3, and 2 consecutively. From the data obtained, although we have 3x3 cross-tab, there are 2 cells have expected counts less than 5. Therefore, chi-square method can't be performed. To eliminate the issue, we merged cell less than 5 together into one category. Assume that respondents who answered sound alert and via cellphone equally grouped as other than a one-click button (labeled as other merged). Then, we obtained new data with 3x2 cross-tab (Table 15). The result obtained from chi-square analysis shows a degree of freedom equal 2, x^2 = 0.716, and p-value is 0.699 with 95% significant level (Table 14). The critical value in this case fixed at point 5.991, determined based on

Chi-square distribution table with degrees of freedom (df) equal to 2 and p-value equal to .05, then we obtain critical value equal to 5.991. value of x^2 = 0.716 extremely smaller than 5.991 (critical value) and p-value greater than significance level (.669 >.05). based on this evidence, we can conclude that, there is no relation between rethe spondent's method preference and usefulness of the system. failed to reject H0 and proof our 7th hypothesis wrong.

Table 14. Chi-Square Tests of Usefulness of the system and type of respondent's method preference

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	.716[a]	2	.699
Likelihood Ratio	.689	2	.708
Linear-by-Linear Association	.430	1	.512
N of Valid Cases	300		

a. 1 cells (16.7%) have expected count less than 5. The minimum expected count is 3.74.

Table 15. Cross-tabulation of Usefulness of the system and type of respondent's method preference

			methods		
			Other	One-click button	Total
usefulness	No	Count	5	6	11
		Expected Count	3.7	7.3	11.0
		Residual	1.3	-1.3	
	Maybe	Count	29	55	84
		Expected Count	28.6	55.4	84.0
		Residual	.4	-.4	
	Yes	Count	68	137	205
		Expected Count	69.7	135.3	205.0
		Residual	-1.7	1.7	
Total		Count	102	198	300
		Expected Count	102.0	198.0	300.0

4.2.8 Hypothesis 8, Perceived of usefulness will influence attitude toward the use of the system

To proof 8th hypothesis, we used cross-tabulation analysis combined with chi-square analysis and risk estimate test for variables usefulness of system and attitude towards use. The result obtained from cross-tabulation shows from a total of 205 respondents who perceived the usefulness of the system 202 respondents answered they have the willingness to use the system, while 3 respondents had no willingness to use the system. For respondents that not sure with the usefulness of the system from a total 84 respondents, 58 of them believes they had the willingness to use the system, while 26 respondents had no willingness to use the system. From a total of 11 respondents who believe there is no usefulness of the system, 9 respondents answered they had no willingness to use the system and 2 respondents answered they had the willingness to use. From the data obtained, although we have 3x2 cross-tab, there are 2 cells have expected counts less than 5. Therefore, chi-square method can't be performed. To eliminate the issue, we merged cell less than together into one category. Assume that respondents who answered "Maybe" counted equally with "No'. this based on skeptic point of view that respondents who not sure about the usefulness of the system will likely believe the system is useless. Then, we obtained new data with 2x2 cross-tab (Table 16). The result obtained from chi-square analysis shows a degree of freedom equal 1, x^2 = 73.451, and p-value is extremely small value at 0.000, we can assume that the value is around 0.0001 with 95% significant level (Table 17). The critical value in this case fixed at point 3.84, determined based on Chi-square distribution table with degrees of freedom (df) equal to 1 and p-value equal to .05, then we obtain critical value equal to 3.84. value of x^2= 73.451 extremely

greater than 3.84 (critical value) and p-value less than its significant level (.0001 >.05) which is strongly against H0. value looks unreasonable. to confirm it, we run additional analysis used risk estimate to find odds ratio. The test again, shows large value of odds ratio a person who perceived usefulness more likely willing to use the system by 39.278 for cohort value is 1.560 which is greater than 1 (Table 18). It proofs the statement but still, large number may occur cause by arithmetic error or maybe our data did not meet the assumptions for Chi-square test. To strengthen our statement, we preferred to look at correlations table that shows the value of .558 that correlation is significant at the 0.001 level confidence level (Table 21). based on this evidence, we can conclude that, there is strong positive correlation between usefulness and attitude towards use of the system. thus, we reject H0 and proof our 8th hypothesis that increasing in perceived usefulness will increase attitude toward use.

Table 16. Cross-tabulation of Usefulness of the system and attitude toward use

			Usefulness of system		
			yes	no	Total
Willingness to use	Yes	Count	202	60	262
		Expected Count	179.0	83.0	262.0
		Residual	23.0	-23.0	
		Std. Residual	1.7	-2.5	
	No	Count	3	35	38
		Expected Count	26.0	12.0	38.0
		Residual	-23.0	23.0	
		Std. Residual	-4.5	6.6	
Total		Count	205	95	300
		Expected Count	205.0	95.0	300.0

Table 17. Chi-square test of Usefulness of the system and attitude toward use

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	73.451[a]	1	.000		
Continuity Correction[b]	70.288	1	.000		
Likelihood Ratio	71.657	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	73.206	1	.000		
N of Valid Cases	300				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.03.
b. Computed only for a 2x2 table

Table 18. Risk estimate test of usefulness of the system and attitude toward use

		95% Confidence Interval	
	Value	Lower	Upper
Odds Ratio for Usefulness of system (Yes / No)	39.278	11.668	132.217
For cohort Willingness to use = yes	1.560	1.337	1.821
For cohort Willingness to use = no	.040	.013	.126
N of Valid Cases	300		

4.2.9 Hypothesis 9, Perceived ease of used will influence attitude toward use of the system

To proof 9th hypothesis, we used cross-tabulation analysis combined with chi-square analysis and risk estimate test for variables perceived ease of use and attitude towards use. The result obtained from cross-tabulation shows from total of 262 respondents who willing to use the system 175 respondents answered they preferred one-click button as the best method,

while 60 respondents preferred sound alert and 27 preferred via cellphone. From total of 38 respondents that had no willingness to use the system, 23 respondents preferred one-click button and the rest of 9 and 6 respondents answered sound alert and via cellphone consecutively (Table 19). The data obtained from chi-square analysis shows degree of freedom equal 2, $x^2 =$ 1.114, and p-value is .573 with 95% significant level (Table 20). The critical value fixed at point 5.991, determined based on Chi-square distribution table with degrees of freedom (df) equal to 2 and p-value equal to .05, then we obtain critical value equal to 5.991. value of $x^2 =$ 1.114 extremely smaller than critical value and p-value greater than its significance level (.573 >.05). based on this evidence, we can conclude that, there is no relation between perceived ease of use and attitude towards use. Thus, failed to reject H0, both perceived ease of use and attitude towards use variable are independent and proof our 9th hypothesis wrong, it had no effect of value change between variables.

Table 19. Cross-tabulation of willingness to use the system and type of method preference

		Method preferences			
		One-click button	Sound alert	Via cellphone	Total
Willingness to use	No	23	9	6	38
	Yes	175	60	27	262
Total		198	69	33	300

Table 20. Chi-Square Tests of willingness to use the system and type of method preference

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.114[a]	2	.573
Likelihood Ratio	1.026	2	.599
Linear-by-Linear Association	.977	1	.323
N of Valid Cases	300		

Table 21. Correlation matrix table at significant level of 0.05 and 0.01

Correlations

		time	Gender	Ages	Q4.Have you/your colleagues ever faced a threat in public or danger happened around you/them?	Q6.If you stuck in danger situation alone what you need the most?	Q7.Do you think this application is useful while you are in danger situation?	Q9.The device will able to send help alert to the nearest people while you are in danger situation. Would you use it?	Q10.In your opinion, which method of activation is the best suited for this device?	Q11.if there are other people nearby who need your help, would you willing to help?
time	Pearson Correlation	1	-.007	.036	-.009	-.142*	-.543**	-.425**	-.014	-.102
	Sig. (2-tailed)		.905	.529	.872	.014	.000	.000	.812	.079
	N	300	300	300	300	300	300	300	300	300
Gender	Pearson Correlation	-.007	1	-.013	.119*	.186**	.112	.113*	-.021	-.021
	Sig. (2-tailed)	.905		.828	.040	.001	.054	.050	.721	.717
	N	300	300	300	300	300	300	300	300	300
Ages	Pearson Correlation	.036	-.013	1	.030	.128*	-.027	-.037	-.019	-.010
	Sig. (2-tailed)	.529	.828		.602	.026	.643	.529	.741	.861
	N	300	300	300	300	300	300	300	300	300
Q4.Have you/your colleagues ever faced a threat in public or danger happened around you/them?	Pearson Correlation	-.009	.119*	.030	1	-.109	.107	.190**	.000	-.022
	Sig. (2-tailed)	.872	.040	.602		.059	.065	.001	.993	.706
	N	300	300	300	300	300	300	300	300	300
Q6.If you stuck in danger situation alone what you need the most?	Pearson Correlation	-.142*	.186**	.128*	-.109	1	.232**	.237**	-.083	.090
	Sig. (2-tailed)	.014	.001	.026	.059		.000	.000	.153	.122
	N	300	300	300	300	300	300	300	300	300
Q7.Do you think this application is useful while you are in danger situation?	Pearson Correlation	-.543**	.112	-.027	.107	.232**	1	.558**	-.012	.309**
	Sig. (2-tailed)	.000	.054	.643	.065	.000		.000	.842	.000
	N	300	300	300	300	300	300	300	300	300
Q9.The device will able to send help alert to the nearest people while you are in danger situation. Would you use it?	Pearson Correlation	-.425**	.113*	-.037	.190**	.237**	.558**	1	-.057	.083
	Sig. (2-tailed)	.000	.050	.529	.001	.000	.000		.324	.152
	N	300	300	300	300	300	300	300	300	300
Q10.In your opinion, which method of activation is the best suited for this device?	Pearson Correlation	-.014	-.021	-.019	.000	-.083	-.012	-.057	1	-.099
	Sig. (2-tailed)	.812	.721	.741	.993	.153	.842	.324		.088
	N	300	300	300	300	300	300	300	300	300
Q11.if there are other people nearby who need your help, would you willing to help?	Pearson Correlation	-.102	-.021	-.010	-.022	.090	.309**	.083	-.099	1
	Sig. (2-tailed)	.079	.717	.861	.706	.122	.000	.152	.088	
	N	300	300	300	300	300	300	300	300	300

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

5. DISCUSSION

5.1 Faster time will likely lead into perceived usefulness of the system

The result of 1st hypothesis shows difference in time will affect respondent's decision, faster time will lead into perceived usefulness of the system. based on suspect's point of view, they would commit their crime as fast as possible, at the same point the victims also need to rescue as fast as possible, so we saw it as time race battle, the fastest is the winner. time under 80 seconds have positive acceptance within respondents. it may happen based on society believes that minute or two is rational duration that have high probability to prevent of capture the suspects. The problem with handling crime is the longer time gap between crime action and authority responds will reduce the probability of seize or prevent the suspect. For duration over 80 seconds people start to argue the usefulness of the system, they may believe the response takes too long to prevent threat and have low probability to handle it.

5.2 People who willing to help more likely lead into perceived usefulness of the system

The result of 2nd hypothesis proof the hypothesis, the more people willing to help the more they will perceive the usefulness of system. it fit the assumption that society actually have kinship between other but sometimes, they constrained by no alert or notification that can assure them to rescue victim, the other factor such as law each different region may constraint them to get into action. majority of people who willing to help will agree with our purposed model. But some of respondents unsure with the model, they may believe with or without this system would not help them to get more advantage or affect their decision to help. In other hand, for almost of all respondent who don't want to help still believe this system, it is contradict with our hypothesis. It may cause of risk of help other may put them into danger as well, but they might believe in usefulness as the users not person who helps.

5.3 Self-efficacy will likely lead into perceived usefulness of the system

The result of 3rd hypothesis shows majority respondents need help from other and it is positively lead into usefulness of system. crime usually commits on quiet area and usually at night, psychologically person will less likely to do their crime in crowded location because to many witnesses and they will easily to get arrest, so this system is aiming the weakness spot of perpetrator. Surprisingly only 37 respondents who answered police total of 89 respondents who need other than people around. Thus, rather than rely on weapon or authority who is likely quite distance from threat location, people will likely to rely on other around. in other hand, contradict with our statement 57 respondents who not sure and do not believe with the system still answered that they need other help as well. we assume this because of the system did not meet their demand of safeties, we admit this system has several weaknesses, such as person who get notification or alert might be criminals as well or a person might use it for prank, spam, or even to hook their victims into their location. Those factors might be the reason of society unsureness of the system.

5.4 Experienced threat will influence attitude towards use of the system

The result of 4th hypothesis shows majority respondents who had experienced any threats have greater positive response in this system compare with who had not experience any. However, both type of respondents had significant response in accepting this system. for the victims experienced threat will have trauma left in their-self, they surely do not want it to happened again. By purposing this system majority of them will accept it and perceive it as alternative to makes them fells more secure. For the rest of respondents who had not experience any threat also looking this idea as a good solution to improve their safeties.it tend to bear out how people are understand the environment around them is not good enough to be called safety environment.

5.5 Gender will influence attitude towards use of the system

The result of 5th hypothesis shows, more than 89 percent of respondents willing to use the system. difference in gender

have slightly different influence in attitude toward system. The early assumption state that women will use this system more than man because they more likely become a target of violent and criminal, surprisingly, the statistics result shows significant level falls exactly at the significant level. The mindset that women are more frail than a man makes woman most likely to become a target victim are remains unproven. We don't have enough evidences that prove it, the result described both man and woman have positive response in this system. however, we do prove the assumption that gender affecting the attitude toward use even though by small influence. Our limitation on this section is that difference between both gender is too large, the fact that random sample of gender is majority woman, more equal sample will give more accurate data result.

5.6 Ages will influence attitude towards use of the system

The result of 6th hypothesis shows, difference in ages have no influence in affect attitude towards use of the system. the early assumption that state a person in their 30's will less likely to use this system, because they more stable in their financial status and almost of them have cars and people in 18's-30's just started to develop their financial that may take public transportation or motorcycle remain unproven. over 80% in all group ages response with usefulness of the system, we assume that all group of society aware of the situation around them, this kind of environment might be existing for a long time from older generation until today, so the parents will advices their children to aware of danger/threat, this assumption may be the answer why ages did not influence attitude towards system. our limitation in this variable is that the ages of respondents that we asked are not equally distributed the fact that random sample that we find on the location majority refers to one group of ages.

5.7 Perceived ease of use will influence perceived of usefulness and attitude towards use

The result of 7th and 9th hypothesis shows, perceived ease of use have no influence in affecting both usefulness and attitude towards use. The early assumption of their method preference might meet their demand of usefulness and increase likelihood toward using the system remain unproven. Over 55% of all group people believes of the system and over 81%. This may occur from limitation of the research data. The variable of perceive ease of usefulness to general and little, cause fail to describe the assumption into evidence. Our several limitations can be described into several reason: first, we do not have comparison for our model. And the prototype of this system is not made. it is hard to get information of ease of use from our respondents since they have not used the devices yet. Secondly, the research towards prototype require long time and costly. Furthermore, simulation using prototype require large number of participants and area. We also need to intervene with local government to conduct activity.

5.8 Perceived of usefulness will influence attitude toward use of the system

The result of 8th hypothesis shows, almost all of respondents who believes in usefulness of system have positive attitude towards use. and who don't have negative attitude towards use. looking at the answers both data shows a lot of similarity and seems not classified normally, the rest result also shows extremely large value. It may occur because our data did not fit Chi-square test, but referring cross-tab table also have extremely large number who answer "Yes" for both question. The question also similar in their writing, it might create miss conception between these two questions, aware of that problem our questionnaires are spread face to face with the respondents. It enables us to explain the difference between two question. doubt that the answer did not classified normally is not happened. Otherwise the data shows reasonable fact that person who believes it useful will use it as well and vice versa. Further into our data there are small number of respondent shows contradictive in their answer, some respondents who believe the system have no intention to use it and some who do not believe the system have intention to use it, we can define it as an errors or we can explore it to find reasonable explanation of it. Generally speaking, people may think it actually useful but the current condition they don't need it, might be useful for someone else. Or people may think is actually useless but might be help, better try than nothing.

6. CONCLUSION

This research proposed a new system model to prevent and respond threat/danger situation within society. The study conducted were try to uncover how society are able to perceived usefulness and accept a new system with the objectives empower them in order to prevent threats. the study based on technology acceptance model in order to find what kind of society will affect the attitude towards use of system. after performing this research, we conclude that there are several factor that influenced perceived usefulness of system such as, idle time duration, faster responsive time will increase usefulness of system and increase probability to prevent or rescue victims, secondly, more number of responsive person also increase usefulness of the system. from data collected the most help or device needed in danger situation is help from other where shows self-efficacy play important role in how respondents perceived usefulness of system. Furthermore, usefulness of system, gender, and experienced threat will influence attitude towards use. woman slightly more likely using this device than a man, and person who had experienced threat at least once more likely to accept this system than who had not.

This research had several limitations, we briefly mention our limitation. Firstly, lack of proper simulation research, the prototype of the device and system had not been created yet, limited time of research and high cost in making prototype become the biggest barrier. Secondly, small number of sample makes unbalanced number each group within variable makes our result less accurate. Furthermore, the variable perceive ease of usefulness give to general and small information. Therefore, we fail to describe the assumption into evidence. our barrier is a fact that, we do not have comparison for our model. And the prototype of this system is not made. it is hard to get information of ease of use from our respondents since our respondents have not used the devices yet. Besides that, simulation using prototype require large number of participants and area. We also need to intervene with local government to conduct activity. Lastly, future research improvement for our limitation is must be performed. Developing a prototype is necessary to let respondents able to utilize the devices in order to get relevant information for perceived ease of used. larger simulation area and participants also bring more accurate result.

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