The Use of Web and Mobile Technologies in Enhancing Intelligence Crime Monitoring and Reporting

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Abstract-Intelligence Crime Monitoring and Reporting (ICMR) is a concern to security systems across the nations. Security systems have the objective of crime detection and prevention. The conviction of crime doers relies mostly on responsive systems of information management. The efficiency of the security agents (such as the police) and the effectiveness with which agent's tackles crime depends on not only the quality of information derived from crime records but also how fast information is accessed. In the current competitive world of work public establishments need quality and systematic processes to increase their working efficiency and also enhance their productivity. ICMR can handle all aspects of managing crime using first hand information reports lodged by citizens. ICMR can also perform for tracking and monitoring intelligence (or web tips) provided by the public to the security agents.

Index Terms - Crime, intelligence, web, technology, application, crime, monitoring, , reporting, security, systems

1. INTRODUCTION

Implementing security intelligence crime monitoring and reporting systems have both advantages and disadvantages within the communities. The advantages outweigh the disadvantages which can be overcome through technological measures and education within the communities. Implementing ICMR systems fully provide three important tasks that aid to reduce opportunities for criminals. First ICMR can strike a balance between the numbers of crimes committed against the number unreported crimes. Secondly is that ICMR provides an option for citizens to report crimes from any location, letting the security agents track from their offices for immediate response to violent crimes. Using systems that report crimes, can facilitate analysis of crime situations in the communities therefore providing knowledge on how to deter crime. Finally ICMR facilitates the provision of intelligence to the law enforcement agencies without fear of victimization.

2. MONITORING AND REPORTING SYSTEMS

Studies have been done in intelligence crime monitoring and reporting. The aims of ICMR are to help inform crime intelligence agencies and engage security agents in crime prevention [1]. ICMR systems such as the Federal Bureau of Investigation (FBI) utilize uniform crime reporting system. Systems of crime monitoring are starting place for law enforcement agents, students of criminal justice, researchers, members of the media, and the public at large seeking information on crimes. Systems provide a nationwide view of crimes based on the submission of crime information voluntarily reported by law enforcement agencies [2]. Statistics on crime reveal on the number of crimes committed as opposed to the number of crimes reported to law enforcement. There are several reasons crimes may go unreported including:- fear of repercussions; embarrassment or shame; assumption that the crime is too insignificant to warrant reporting; or a belief that reporting the crime will make no difference. Perhaps the single most significant factor in determining whether or not to report a crime is the convenience aspect to reach the security

agents [3]. Web and mobile intelligence crime monitoring and reporting systems can offer crime victims some convenience by striking a balance between the numbers of crimes committed against the number of crimes reported.

Online crime reporting systems are an affordable alternative to hiring additional officers to deter increased crime volumes [5]. The average costs of emailing a crime report through an online crime reporting system is negligible [6] with benefits of offsetting the workload demands of police officers who are required to write reports [7]. The systems allow for gathering statistical based on crime patterns in a specific geographical areas [8].

Intelligence crime monitoring system, crime reporting can be reported via the internet [9-17].

3. METHODOLOGY

Sequential phases in waterfall model were used in the implementation of ICMR and involved the following stages:-

Requirement Gathering and analysis: All possible requirements of the system to be developed were captured in this phase and documented in a requirement specification document.

System Design: The requirement specifications were studied and system design prepared. The system design specified hardware and system requirements and as well as defining the overall system architecture.

Implementation: inputs from system design; were used to develop the system units. Each unit was developed and tested for its functionality.

Integration and Testing: All the units developed in the implementation phase were integrated into a final system. Post integration

of the entire system was tested for any faults and failures.

Deployment of system: The ICMR was deployed in the working environment.

Maintenance: issues arising from the client environment were fixed

4. RESULTS

Results of a preliminary survey showed that challenges experienced using the current manual system can be eliminated using an online system (intelligence monitoring and reporting system) with almost 64% percent of those interviewed pointing out that an online system will solve these challenges (figure 1).
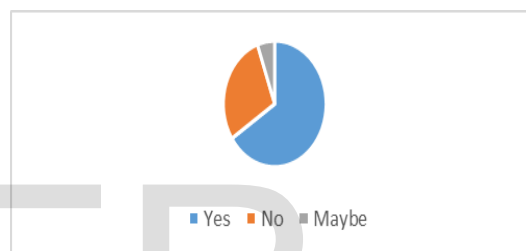

Figure 1: data for whether the crimes can be eliminated using an online system

The survey also showed that around 53% of crime victims take over an hour waiting at the police helpdesk to only report their crimes. These statistics show that there are lots of delays in the current system, thus justice for crime victims is delayed. Literature also showed that an online system can be the solution to these delays given the widespread use of internet making these services easily accessible to everyone (figure 2).
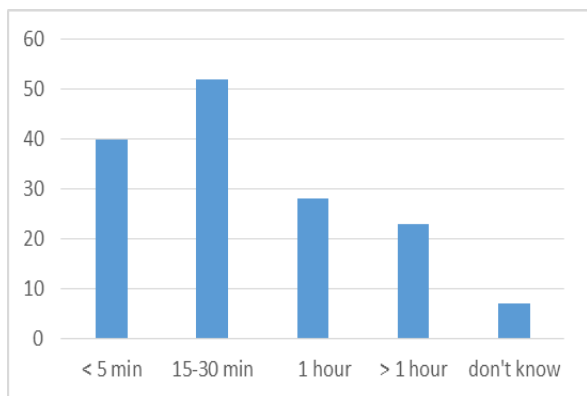
Figure 2: average waiting time for security agencies services

The survey showed that most of the people are displeased with the current work rate of the security agencies when it comes to dealing with crime (and intelligence) related incidents reported (figure 3).
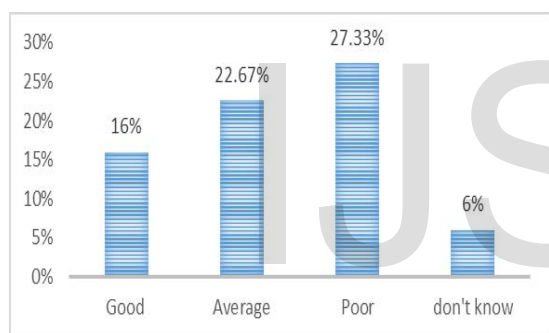

Figure 3: security agencies work rate chart

The results also revealed that most of the interviewed would have preferred an online system over the current manual system with 53.33% of those interviewed supporting the adoption of an online system while only 28% supporting the current manual system. 16.67% preferred other modes of crimes and intelligence reporting such as via their phones (figure 4).
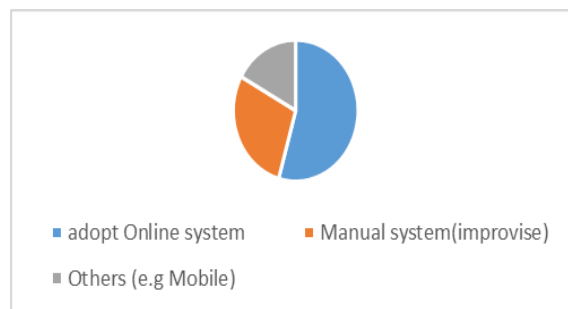

Figure 4: Chart showing the response of how to improve the current reporting structure

Evaluation of the information (intelligence) provided by the public to the security agents, most of the people interviewed think that the intelligence provided by the public is always important (46.00%). The results showed that if a platform could be created so that the public could provide information to the security agents anonymously would enhance service delivery by the security agents (figure 5).
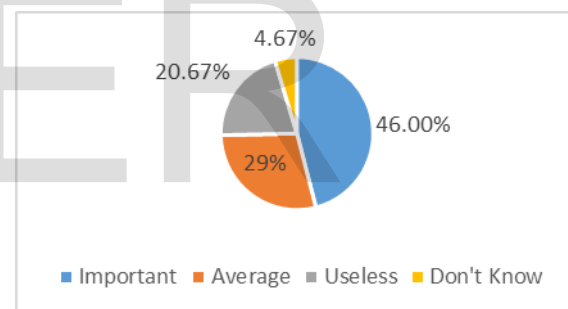

Figure 5: analysed data on relevance of web intelligence

5. IMPLEMENTATION

The implementation process was base on citizen surveys and personal interviews with law enforcement agencies that currently utilize online crime reporting system in place.

ICMR was developed using PHP as front end, apache server as back end in Windows 8 platform. An Ozeki NG SMS Gateway or Ozeki Server Manager was used.

In the ICMR only the administrator and the investigation officer's stationed at different stations are able to login to their home pages.

The public can only use ICMR to report crimes and Intelligence (or web tips) and to track down crimes reported.

In the officer's module, each of the officers must first register with the System (through the administrator). Once the officer registers with the system they can be assigned investigation tasks, view crime records and also give a brief statement of information they collect in case they are assigned investigation tasks.

In the monitoring module the administrator can view crime records (all, pending and records under investigation), assign crimes reported to investigation officers, delete, and search for records. When assigned an investigation task the officer is notified via a private message and an SMS.

In the User module, the user is provided with the platform of reporting crimes, reporting web tips or intelligence to the security agents and also tracking down all the process involved in seeking justice for the crimes reported without having to appear physically in the station. To enhance information flow in the system has an inbuilt messaging module is also involved whereby the user receives information regarding the crimes reported or intelligence provided via the phone or the private messaging module.

6. TEST RESULTS

The implemented ICMR system was tested using a group of 8 users who interacted with the various system functionalities. They verified that the system provided the appropriate functionality.

Functionality	Input	Output
User Registration (Account Creation-Users)	User enters appropriate record.	User registration

Username and password sent to the user	Through the details provided by the user i.e. mobile number and password	Username and password sent as an SMS to the user mobile number
Report Crime	User provides crime details through the provided form parameters	Crime reporting -> FIR(First-Information Report)
Provide intelligence (Web Tips)	User provides Intelligence or Tips to the security agents	Intelligence Comprehensive Report summary
Report generation.	User can generate FIR Report after s/he reports crime, Crime Statistics Report	A comprehensive reports
View Crimes Under investigation	For crimes under investigation the admin can send crime progress details to the Crime Victim and Accused mobile number	Generates automatically an SMS that can be sent by the admin to the victim and accused mobile number
View Crimes Pending	Administrator can Simply assign Investigation tasks to investigation officers via the "Assign Investigation Officer" Option	Sends an SMS to the Investigation officer Mobile number and also a private message to the system and the investigation officer can view through in his own private message inbox
Web tips (Intelligence)	The administrator through the details provided by the citizens as tips he can assign Investigation tasks to the available investigation officers. Admin can also delete the crime if it seems irrelevant	Sends an SMS to the Investigation officer Mobile number and also a private message to the system and the investigation officer can view through in his own private message inbox
Add Investigation officer	It's the responsibility of the administrator to add Investigation officer details to the system and	SMS containing username and password (Default) is sent to the registered officer and can use it to access the system.

	can also print user details	Officers report can also be generated
Add Most wanted criminals details	The administrator can add criminals records (most wanted) for the users to view and provide any leads to these criminals	Most wanted criminals records details page for the users (citizens) to provide information to the security agents
Submit Most Wanted Tip	The User can submit tips of most wanted criminals. This information can be used to help the security agents to capture the criminal	Report of the most wanted criminal details

7. EVALUATION

The ICMR system was compared with the crime reporting systems illustrated in the literature review. In the previous systems a victim can report crimes without getting an immediate response from the security agents. Compared to ICMRS, the previous systems had limited capabilities because the public can only report crime manually without providing tips or intelligence to the security agencies. ICMRS has also digitized the management and monitoring of crimes making it effective and easy to monitor and report crime.

The ICMR system was compared to "CrimeStoppers system" which is an independent charity helping law enforcement to locate criminals and help solve crimes. They have an anonymous 24/7 phone number, that people can call to pass on information about crime; alternatively people can send us information anonymously via our 'Giving Information Form' [12]. The ICMRS combines all the aspects of "CrimeStoppers" with other functionalities such as crime reporting, crime monitoring, providing of intelligence or tips to the law enforcers.

ICMRS is also built using similar approach as TipSoftTM whereby users can provide web tips to the law enforcers worldwide. TipSoftTM is integrated with SMS in such a way that users can submit tips using SMS and will be given a code to enable the user to follow up the progress of the tip/intelligence. [17]

8. CONCLUSIONS AND RECOMENDATIONS

ICMR use requires very low system resources to provide the following features:- information accuracy and efficiency in retrieval of relevant data; minimize manual data entry and time needed for the various processing, better service to communities, and user friendliness through interactive processes.

The ICMR System developed is found to be working efficiently and effectively. It results in regular and timely action against crime reported and also intelligence provided by the citizens. It can be observed that the information can be obtained easily and accurately. The simplicity and friendliness are the advantages of this Intelligence Crime Monitoring and reporting system.

9. REFERENCES

[1] Africa Center for Strategic Studies. (n.d.). Police and Crime Prevention in Africa: A Brief Appraisal of Structures, Policies and Practices. Retrieved June 25, 2014, from http://africacenter.org/2008/02/police-and-crime-prevention-in-africa-a-brief-appraisal-of-structures-policies-and-practices/

[2] About UCR. (2013, November 5). FBI. Retrieved June 25, 2014, from http://www.fbi.gov/about-us/cjis/ucr/hate-crime/2012/resource-pages/about-ucr/aboutucr_final

[3] Garrett, Iriberri, & Leroy. (2006, January). Reporting on-campus crime online: User intention to use. System Sciences, 2006. HICSS '06. Proceedings of the 39th

Annual Hawaii International Conference Volume 4, 04-07 Jan. 2006 Page(s):82a - 82a

[4] Welcome to the Kenya Police Website - Report a Crime. (n.d.). Welcome to the Kenya Police Website - Report a Crime. Retrieved June 25, 2014, from http://www.kenyapolice.go.ke/report_a_crime.asp

[5] Commerce Daily Newspaper, MN. (n.d.). Minneapolis police begin campaign to promote online crime reporting system. Finance Commerce. Retrieved July 27, 2014, from http://finance-commerce.com/2004/03/minneapolis-police-begin-campaign-to-promote-online-crime-reporting-system/

[6] Geiger, B. (2004, March 4). Minneapolis police begin campaign to promote online crime reporting system. Finance and Commerce Daily Newspaper, MN.

[7] Johnson, C. (2006, February 7). Davis police offer online option for reporting some crimes. Retrieved October 28, 2014, from News10abc Website: http://www.news10.net/printfullstory.aspx?storyid=15796.

[8] Schroeder, C. (2004, July 25). Got a crime to report? Try online. Retrieved July 28, 2014, from The Enquirer Website: http://www.enquirer.com/editions/2004/07/25/loc_kyreport25.html

[9] Bohan, S. (2006, May 24). Crime reporting made easier. Oakland Tribune. Retrieved September 30, 2007, from LookSmart Find Articles Web site: http://findarticles.com/p/articles/mi_qn4176/is_20060524/ai_n16413782

[10] Smith, E. (2005, July). Online crime reporting: Should law enforcement turn to the internet for savings? Public Management, 26-27.

[11] Altamonte Springs Police Department (n.d.). Mission statement Retrieved on August 29, September, from http://www.altamonte.org/aspd/

[12] About Us_CrimeStoppers-CrimeStoppers. (n.d.). CrimeStoppers Website – About Us_CrimeStoppers. Retrieved June 25, October, from https://crimestoppers-uk.org/

[13] Massachusetts Criminal Justice Information System - MCJIS. (n.d.). Massachusetts Criminal Justice Information System Website – About Us_MCJIS. Retrieved June 25, 2014, from http://www.mass.gov/eopss/law-enforce-and-cj/cjis/

[14] CrimeStoppers_Australia - CSA. (n.d.). CrimeStoppers Australia, CSA Website – About Us_CSA Retrieved October 25, 2014 from https://crimestoppers.com.au/corporate-governance/who-is-csa

[15] Tutorials Point Simply Easy Learning. (n.d.). Retrieved November 15, 2014, from http://www.tutorialspoint.com/sdlc/sdlc_waterfall_model.htm

[16] Web Tips. (n.d.). Retrieved November 15, 2014, from https://www.tipsubmit.com/WebTips.aspx?AgencyID=863&HR=http://www.tipsoft.com/index.aspx?p=webtips

[17] Greater Kansas City Crime Stoppers. (n.d.). Retrieved November 15, 2014, from http://kccrimestoppers.com/howitworks.asp