IT Management in Policing: Main Advantages and Disadvantages of IT for Police Managers

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Abstract

As a public organization, police agencies have placed various IT systems into service in order to achieve their goals. More especially, in community policing era, information technology have greatly assisted police managers to improve policing capabilities in terms of serving effectively and efficiently. In describing three dimensions of the IT Management, this paper explores the advantages and disadvantages of using IT in policing area. IT Management offers great advantages in policing for police managers. However, before initiating an IT project, police managers should consider their organizational capacity in terms of budget, personnel, and organizational structure.

Keywords: Police organizations, Information Technologies (IT), management, COMPSTAT, community policing

Introduction

Information technology (IT) has influenced both organizations and individuals since it emerged in the mid-twentieth century. Many scientists called this time period "the Information age". During this era, with the invention of computers and Internet, information has been processed and propagated at very high speed. Thus, this has affected many areas such as the industrial, scientific, private, and the public sectors.

Today, many organizations employ information technology (IT) at various capacities. No matter the type of organization, they invest in IT systems in order to produce quality goods (Nunn, 2001, p.221), to serve the public professionally, and to become competitive. For example, automobile companies use automation systems to produce quality cars within a short period of time. Banks highly invest in IT to make transactions more accurate. In short, firms greatly rely on information systems to stand and compete in the wide business world. While the private sector invests in information technology for those reasons, the public sector mostly uses information

systems to give better service to the citizens. In many countries, the e-government concept has emerged to coordinate on-line IT-based services. Rainey (2003) stated the use of information technology for sharing information or two-way communication with citizens and stakeholders.

As a public organization, police agencies also put various IT systems into service to achieve their goals. More especially, in community policing era, information technology have greatly assisted police managers to improve policing capabilities in terms of serving effectively and efficiently. Also, information technology presents a range of opportunity regarding organizational processes such as e-mail and automation systems. On the other hand, police managers have limited source to develop more functional systems. In addition, more complex systems require more skilled and trained technical personnel to operate and maintain IT activities and functions (Nunn, 2001, p.221).

Therefore, this paper gives brief information on IT Management. The components of information technology management will be explained briefly. Then, the advantages and disadvantages of information technology which is implemented by police organizations will be presented in the last section. In other words, the effects of the information technology projects, used widely in police organizations, will be dwelt on.

Components of IT Management

In order to understand Information Technology Management, three dimensions of this concept needs to be described: Information, Technology, and Management. These dimensions are not static, but they are correlated. Relevant information must be processed, protected, and stored. At these stages, technological tools come such as computers, data storages, transmitters, etc comes into play. Since information is produced from many sources and the technology that was used for information is getting more complex day by day, the need to manage information technology is inevitable. Information technology management is a guideline that organizations use to assess information effectively and efficiently.

In this section, three elements of this new concept will be explained separately. First, the core subject, information, will be assessed in various ways. Why is information so important for us? What is the impact of information to our lives? Then, the technological developments regarding information processing will be illustrated. Furthermore, computer systems and other utilities will be described to emphasize the necessity of information technology in today's society. Then, as a new managerial field, IT Management will be explained: why is it needed and what does it cover?

The Most Valuable Asset: Information

Information has been the most influential factor in social life throughout history. All significant improvements become true because of the use of information. The concept of Information Technology (IT) has been a prominent factor in business and social life for the last five decades. Actually, information exists as long as human beings think and convey their thinking to others. However, in the last century, especially with the invention of computers, information has become a determining factor in organizations, as well as the workforce. Companies compete with their competitors with information which they use effectively. Organizations, which could not transform their potential knowledge into value-added data, disappear in the course of time. Conversely, new companies with an understanding of new technological trends and in using them effectively emerge in the information age (Judy & D'Amico, 1997). In short, information has been the most valuable thing for many organizations as well as individuals who want to survive in this new era.

New Tool: IT

Information technology can be defined as "the use of computers and telecommunications equipment (with their associated microelectronics) to send, receive, store, and manipulate data." (Daintith, 2009). According to this definition, it can be argued that Information Technology had commenced the invention of writing and paper. Therefore, the ability to transfer information by writing on paper have provided people with the ability to protect and store information; to transmit and retrieve their knowledge by sending letters or writing books; and to process them by reading what is inside.

So, what makes the difference between this type of classical information technology and the new type modern one? The difference basically is rapidly in the processing and transmitting of data. Subsequently, we can roughly separate the development of information technology into two groups:

1. Development in Processing Information: In the mid-nineteenth century, electronic cards were used to process and store data. They were called mainframe systems, which were located in big rooms and had no connection to other systems. Since they were large and very expensive, only government institutions and large companies could use such systems for missions with critical applications. After the invention of transistors in 1947 and the use of the Information Technology sector commonly in 1970s, computer systems began to be smaller in size and increase in affordability for many organizations, even for individuals. Therefore, a striking information shows that:

Soaring chip densities are mirrored by plummeting costs of data storage and computation. A 1975-model IBM mainframe computer could carry out 10 million instructions per second and cost about $10 million. In 1995, an ordinary desktop computer employing a Pentium microprocessor could compute nearly seven times that fast, and it cost only about $3,000. In terms of cost/performance, the capital cost of performing one million instructions had dropped from $1 million in 1975 to $45 in 1995. This is a decline of more than 99.99 percent in the span of twenty years. If the price of automobiles had dropped at a corresponding rate, 1975's $100,000 Rolls Royce would have cost $4.50 in 1995 (Judy & D'Amico, 1997, pp. 14).

The next revolution in IT took place in the mid-eighties: Personal Computers (PC). With emerging easy-to-use operating systems like DOS and MS Windows, ordinary persons who have no background in computers began to use personal computers. Today, technological development in this area is still progressing. Consequently, new products have been announced frequently in scientific magazines. These products include tablet pc, memory sticks, mobile phones, smart watches, and even smart home appliances.

2. Development in Transmitting Information (communication): In the last two decades, with the disappearing of mainframes and emerging personal computers, a new trend comes into sight. However, this trend involves connecting computers to each other and sharing information within the organization. Since the late 1980s, the Internet has been the dominant information sharing tool for both organizations and individuals. Increasing bandwidth capacity and getting cheaper service-price of connection have made the Internet the global information highway. Besides the Internet, many communication utilities for peer-to-peer transmission have taken place. They are wireless communication (Mobile phones and wireless network) and satellite communication. Hence, they require high speed and high reliability.

Recipe for using Information Technology: IT Management

Organizations have used information technology for several reasons: improving operational efficiency, introducing new products and services with greater ease, obtaining greater decision support while planning operational and business strategies, and improving brand image, product quality, and customer loyalty (Sriram et al., 2004; Keen, 1981; Ives & Learmouth, 1984; McFarlan, 1984; Cash & Konsynski, 1985; Porter & Millar, 1985; Cash et al., 1988). In order to fulfill these goals by using complex Information Technology systems, organizations have to know how to manage their information systems.

IT Management is an inevitable tool for achieving goals just like a recipe for cooking good meals. Even if you have the right ingredients to

make a meal and a stove or oven to cook them, you can hardly make a tasty meal without a recipe. As in this analogy, IT Management is necessary to use IT Tools (hardware, software, and other technologies) for producing high-quality and satisfying service.

IT Management in Policing

Thus far, a brief definition and historical information on IT management have been given in a general perspective. In recent times, information technology has been a dominant instrument for public organizations in terms of providing quality service to the community (Rainey, 2003). With the emerging of new concept-community policing, police agencies tend to use information technology to widely improve their capability on policing. IT implementations varies in police organizations depending on their structure (local, state, national), budget, and their personal conditions. While some organizations have special IT units which are responsible for developing, implementing, and maintaining IT projects in the organization, some of them use the IT companies to manage their projects. However, all these factors bring about structural and personal issues (Bolman & Deal, 2003). Police managers have to know the advantages and disadvantages of the use of information technologies in taking appropriate steps. Otherwise, they would waste money, have worthless technology, and most importantly, have a bad image because of their failure in making the right decision in choosing proper IT solution for their organization. In this section, the advantages and disadvantages of IT Management will be discussed from the perspective of a police manager.

Advantages of using IT Management

IT is a Great Tool in Terms of Community Policing

In the 1980s, policing mentality began to change from problem oriented policing to problem-solving policing, in other words community policing (Brown & Brudney, 2003). Trojanowiz and Carter gave an expressive definition of community policing:

Community policing is a proactive, decentralized approach, designed to reduce crime, disorder, and by extension, fear of crime, by intensely involving the same officer in the same community on a long-term basis, so that residents will develop trust to cooperate with police by providing information and assistance to achieve those three crucial goals. (Trojanowiz & Carter, 1988)

In order to achieve these goals, police managers gave emphasizes on superior management, the faster solution to crimes, and improved public safety in general (Brown & Brudney, 2003).

Giving effective and efficient service to the community has become the main goal in modern police agencies. In achieving this goal, information technology has become a very important tool that police agencies invest in.

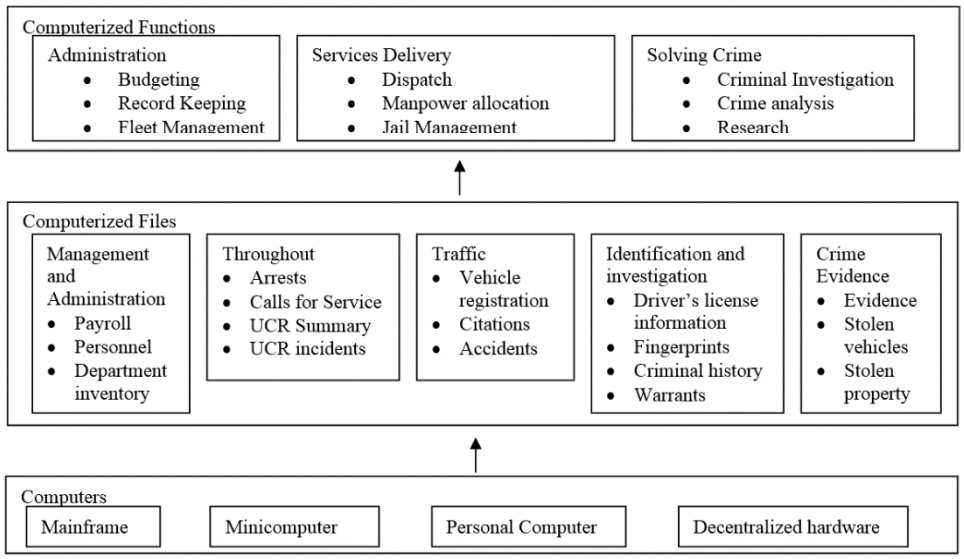
An example employed by some police agencies is crime-mapping. Using statistical data and digitalized-map, police agencies can take proactive measures to diminish crime in certain areas. The data collected by utilizing this technology are utilized in tactical meetings mostly known as COMPSTAT, a "data-driven management model" implemented first in the New York Police Department (BJA, 2013; UM, n.d.). Today, many police organizations are implementing similar meeting models under different names such as CitiStat in Baltimore, USA (UM,n.d.).

In order to use information systems effectively, computerization is important. Nunn puts it:

In a police-agency setting, this could be interpreted as using IT to improve administration of the agency, to reduce the number or share of labor resources assigned to administrative tasks, or to put more officers on the street or in other direct service-delivery operations. Information technology is an input into the production of police services, used in combination with labor and other resources purchased by municipal administrators. From this perspective, the efficiencies promised by IT could be embedded in changes in the combination of inputs used in service production. Pushing the IT-assisted service-delivery concept a bit further, one could also argue that the use of computerized administrative files and functions (for example, equipment inventory, calls for service, dispatch fleet management, manpower allocation) could permit "streamlining" associated with, for example, more efficient patrol routes. (Nunn, 2001, p.222)

Using the data from the Law Enforcement Management and Administrative Statistics (LEMAS) database, Nunn categorized police computerization into three levels: "computer-to-files-to-function" (Figure-1). Furthermore, he argued that computerized functions need to digitalized files in order to operate effectively. In other words, the more computerized files an organization has, the more that organization can use computers functionally. For example, a crime analysis program cannot work properly unless the required data such as crime reports, criminal records, city map etc. are digitalized. In conclusion, information technology provides significant advantages for police managers in achieving the goals in terms of community policing.

Figure 1. Categorization of Police Computerization



Source: Public Administration Review, Mar/Apr 2001; Vol. 61, No. 2, p. 224; ABI/INFORM Global

Figure 2 shows an enormous increase in the number of local police departments using electronic methods for transmitting criminal incident reports. While fewer than a third of police departments of any population category used electronic devices in 2000, 68% of them today uses Information Technology to transmit incident reports from the field in 2013 (Reaves, 2015:6).

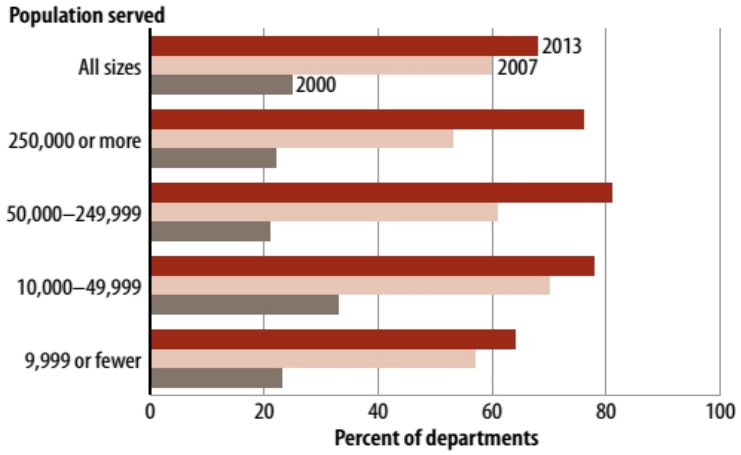


Figure 2. Local Police departments using IT for transmitting criminal incident reports to a central information system by the size of population in 2000, 2007, and 2013
Source: Bureau of Justice Statistics, Law Enforcement Management and Administrative Statistics (LEMAS) Survey, 2000, 2007, and 2013 (Raves, 2015:6)

IT Improves Decision-making Process

Naturally, one of the most important tasks of managers is to make some decisions. According to Rainey (2003), rational decision-making process must contain the elements below:

a. Managers should know all the related goals.

b. Decision makers should clearly know the values used in assessing those goals and targeting the levels of attainment for them. In addition, they also know their preferences among the goals and they can rank them in an order.

c. They should observe alternative ways to realize the goals.

d. Managers must seek and decide the most efficient way for achieving the objectives (Rainey, 2003, p.160-161).

Subsequently, finding the most efficient way heavily depends on the use of organized information which focuses on the problem and solution. Information technology presents powerful means to managers in order to help them in making decisions. By using the specific software which can find, sort, and bring relevant information, managers will be able to see alternative ways and choose the most appropriate ways for both their organization and community.

IT Facilitates the Sharing of Information and the Communicating of Officers in the Organization

Especially in large police agencies, police managers can create a knowledge-platform such as mail-lists, message forums, such that each person can share his or her experience with others. Therefore, this will help to create a synergy in the organization. Since the knowledge increases as it is shared (Hooff & Weenen, 2004; Sthyre, 2002), shared information expands in the organization dynamically.

IT Offers Office-automation System to Increase Organization's Efficiency

There are many office automation softwares that are affordable even for local agencies. More especially, metropolitan police agencies suffer from the great number of document moving horizontally-bureau to bureau- or vertically-top-down. It makes procedures slow and reduces organization's efficiency. Also, using and carrying documents from one place to another is time and money wasting. Police managers can use the great advantage of IT in this area.

IT Presents an Opportunity to Managers to Publicize their Agencies to the Community

With the Internet, police departments have a chance to introduce themselves to the public via their websites. However, many police agencies use their web sites for:

i. declaring their main goals or mission statement;
ii. notifying wanted or missing persons;
iii. reporting the incidents that occurred in their jurisdiction;
iv. getting feedback from the public;
v. giving on-line service such as issuing passport, inquiring stolen-cars; and
vi. making announcement for available jobs.

Nevertheless, this list can be made longer depending on the organization's IT infrastructure and the community needs. For example, Turkish National Police has social media accounts for finding missing persons and it publicizes these accounts on its web page.

Picture 1. Turkish National Police at Turkish citizens and foreign people service with its website (www.egm.gov.tr) created in six languages besides Turkish

In addition, Internet can be used as an image-maker. Even though it is not an effective tool compared to broadcast media today, police managers can contribute to their organization's image by putting accurate information on their websites.

Disadvantages of using IT Management

Limited Budget restricts Police Managers to Invest in Appropriate Information Technology

As stated in the previous section, information systems mainly consist of hardware (server, pc, printer, back-up unit, router, hub, switch, etc.) and software (operating systems, office programs, service -specific programs-

such as call service, inventory, duty schedule, databases, etc). Depending on the complexity of the IT system running in the organization, enough funding is required to operate and maintain the system. According to the results of a survey conducted by the Police Executive Research Forum (PERF) in 1996, 83 percent of the respondents saw the high cost of IT as an impediment factor to change their old system with a new one. Another point to be considered is that 25 percent responded that their lack of information about the product affects them in investing in IT (Seaskate, 1998). However, it is possible to say that information technology components are more diverse and more complex today when compared to 1996. For instance, after the protests and unrests after the shooting of an 18-year old black man by a white police officer and the death in Ferguson, Missouri, USA in summer 2014, several police organizations in the USA required their officers to wear cameras to "help prosecutors close cases faster, reduce use-of-force incidents, and made allegations of misconduct against officers to be easier to probe" (Bakst & Foley, 2015). However, from a budgeting perspective, this new policy burdened extra costs on the city managements. For instance, in the police department in Berkeley, California, "at least $45,000 was spent a year in storing data from 150 cameras and in assigning one or two employees." Subsequently, Wichita Police Department in Kansas had to sell its helicopter to purchase body-cameras and other devices to store the data recorded by the cameras (Bakst & Foley, 2015).

Besides expenditures of hardwares, supplies, softwares, and maintenance agreements are "none equipment expenditures" (Nunn, 2001). In addition, police managers have to consider the cost of the tangible and intangible sides of information technology before investing.

IT requires Trained End-users

In order to use information technology effectively, a specialized and technical persons is needed. Therefore, to operate their information systems, police agencies choose to either train their staff or hire technical person from outside. Like Turkish Police Organization, large police agencies have their training buildings and special computer courses to train their officers. Since IT world is dynamic, that is, new IT products, new version of softwares and hardwares appears each day, yesterday's knowledge sometimes is not enough to operate today's systems. However, this requires endless training which means extra expenses and loss of work force temporarily for managers.

Police Managers must be concerned of the Security of their IT Infrastructure

Another big challenge for police managers is to ensure the security of their information systems. Therefore, they must consider the threats from the Internet. Since police records are mostly relevant to criminals, they should be kept secured. IT Security requires certain precautions based on both hardware (technical and non-technical) and software (firewalls, anti-virus programs, etc). This issue requires both extra budget and trained-person.

Conclusion

Information technology offers great opportunity to police organizations as long as it is well handled by the police agencies. In community policing area, it helps police organizations to serve the community effectively and efficiently. Police managers use information systems as supportive tools in making decision progress. With IT, all members of the police agencies can share their experiences and knowledge, which fosters creativity in the organization. Office-automation in the organization prevents the wasting of money and time. Also, it eliminates erroneous documentation in large organizations. In addition, police managers allow the community to present their goals, objectives, and activities by creating websites. On the websites, on-line services can also be presented.

On the other hand, besides those benefits of information technology, operating an information system requires funds and educated staffs. Thus, this brings about great distress to many police managers who have limited budget and insufficient officers. In addition, technological infrastructure creates a vulnerable hole because of its complexity and its integrity with other systems such as the Internet, extranet, etc. Therefore, appropriate measures must be taken to secure the technological infrastructure. Also, it requires extra expenses to build firewalls and anti-virus programs. Since new inventions, new applications, and new threads are emerging endlessly in the IT world, police managers have to update their information in terms of taking appropriate action.

In conclusion, IT Management offers great advantages in policing for police managers. On the other hand, before initiating an IT project, police managers should consider their capacity in terms of budget, personnel, and organizational structure. A big challenge for them is to know how to handle this new tool in favor of their organizations and the community.

References:

Bakst & Foley (2015). For police body cameras, big costs loom in storage. Retrieved from https://www.policeone.com/police-products/body-cameras/articles/8243271-For-police-body-cameras-big-costs-loom-in-storage/

BJA-Bureau of Justice Assistance (2013). Compstat: Its Origins, Evolution, and Future In Law Enforcement Agencies. Police Executive Research Forum, Washington, DC 20036

Bolman & Deal (2003). *Reframing Organizations* (3rd ed.) Jossey-Bass:Wiley

Brown & Brudney (2003). Learning Organizations in the Public Sector: A Study of Police Agencies Employing Information and Technology to Advance Knowledge. *Public Administration Review* Jan/Feb 2003 Vol.63 No.1

Cash & Konsynski (1985). IS redraws competitive boundaries. *Harvard Business Review*, *62*(3), 134–142.

Cash, McFarlan, & McKenney (1988). *Corporate Information Systems Management: The Issues Facing Senior Executives*. Homewood, IL.

Daintith (2009). "IT", A Dictionary of Physics, Oxford University Press.

Hooff & Weenen (2004). Committed to Share: Commitment and CMC Use as Antecedents of Knowledge Sharing. *Knowledge and Process Management* Vol. 11 No. 1 pp 13–24

Ives & Learmouth (1984). The information system as a competitive weapon. *Communications of the ACM*, *27*(12), 1193–1201.

Judy & D'Amico (1997). *Workforce 2020* Hudson Institute, Inc.

Keen (1981). Information system and organizational change. *Communications of the ACM*, *24*(1), 24–33.

McFarlan (1984). Information technology changes the way you compete. *Harvard Business Review*, *62*(3), 98–103.

Nunn (2001). Public Information Technology: Assessing the Effects of Computerization on Urban Police Functions. *Public Administration Review* Mar/Apr 2001 Vol. 61, No.2

Porter & Millar (1985). How information gives you competitive advantage. *Harvard Business Review, 63(4),* 149–160.

Rainey (2003). *Understanding& Managing Public Organizations* (3rd ed.) Jossey-Bass:Wiley

Raves (2015). *Local Police Departments, 2013: Equipment and Technology*. The Bureau of Justice Statistics of the U.S. Department of Justice **(**NCJ 248767**)**

Seaskate (1998). *The Evolution and Development of Police Technology* A Technical Report

prepared for The National Committee on Criminal Justice Technology National Institute of Justice available at http://www.nlectc.org/txtfiles/policetech.html

Srirami, Krishnan, & Lai (2003). Information Systems Expenditures and Firm Value: Further Evidence from Financial Services Industry. M.

Khosrow-Pour (Ed.), Advanced Topics in Information Resources Management Vol. 3. Idea Group Publishing. London

Styhre (2002). The knowledge-intensive company and the economy of sharing: rethinking utility and knowledge management. *Knowledge and Process Management* 9(4): 228–236.

Trojanowicz & Carter (1988). *The Philosophy and Role of Community Policing* National Center for Community Policing School of Criminal Justice Michigan State University. Available at http://www.cj.msu.edu/~people/cp/cpphil.html

UM-University of Maryland, (n.d.). Implementing and Institutionalizing Compstat in Maryland available at http://www.compstat.umd.edu/what_is_cs.php retrieved 10.12.2015