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TRANSFORMING WORK PRACTICES IN THE POLICE CONTEXT: KNOWLEDGE SHARING, NEW TECHNOLOGIES, AND ORGANIZATIONAL CHANGE

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Abstract

Knowledge has always been important to organizations. Technological advances have helped to make knowledge management and sharing a requirement in many industries and a competitive advantage in countless others. New and emerging classes of technologies have swept into all areas of business, industry and government. As these technologies began being used in organizations, it became apparent that the use of technologies for knowledge management could have wide spread implications on organizational behavior, changing the underlying factors that influence work processes. These changes are nowhere more evident than in government, specifically in the law enforcement community. As a result of the events of September 11, 2001, we have witnessed an increased effort of law enforcement agencies to share knowledge and collaborate to promote attentiveness for the security of the community. This research draws upon existing research on knowledge sharing and organizational change to understand the role of new technologies in the context of the police. The three major objectives of the proposed research are to understand: (1) individual, group, organizational, and technological factors that influence work practices in police departments, (2) the role of new technologies on these work practices, and (3) how these changes in work practices affect individual, group, organizational, and technology use factors. This longitudinal field study utilizes multiple research methods from empirical social science and behavioral research to validate our model of factors that influence work in police departments. The research will have theoretical implications for the disciplines of social psychology, organization science, information systems, and criminology. The research outcomes will be particularly applicable to law enforcement agencies, academics studying public sector institutions, organizational change theorists, and knowledge management practitioners.

Background and Objectives

Knowledge has always been important to organizations. Technological advances have helped to make knowledge management and sharing a requirement in many industries and a competitive advantage in countless others. New and emerging classes of technologies have swept into all areas of business, industry and government. As these technologies began being used in organizations, it became apparent that the use of technologies for knowledge management could have wide spread implications on organizational behavior, changing the underlying factors that influence work processes. These changes are nowhere more evident than in government, specifically in the law enforcement community. As a result of the events of September 11, 2001, we have witnessed an increased effort of law enforcement agencies to share knowledge and collaborate to promote attentiveness for the security of the community.

Incentives that exist in private sector organizations (such as competition) to develop and adopt technologies and knowledge management practices have been missing in government agencies (Rocheleau 1993). However, given the increased focus of recent government funding initiatives to integrate technology into government sectors and legitimize the area of digital government and

eGovernment, it is expected that more technologies will be used by public sector agencies, including law enforcement, in the future.

In order to maximize the benefits of technologies and fully realize the results of technology in these organizational settings, it is imperative that we understand the role that technology plays in work practices, such as knowledge management and sharing. The general objective of this research is to investigate the interdependence between the different organizational factors and new technologies that influence work practices in a police organization. Specifically, the three major objectives of the proposed research are: (1) to understand individual, group, and organizational factors that influence work practices in police departments, (2) to understand the role of new technologies on these work practices, and (3) to understand how these changes in work practices in turn, affect individual, group, and organizational factors. This longitudinal study explores the role of different technologies on the relationships between existing knowledge sharing practices, communication, performance, and other work processes. To this end, we are partnering with a local police department that is in the process of implementing a number of different wireless LAN technologies for use in the patrol vehicles to enable criminal investigation, communication, knowledge sharing, and eventually criminal information documentation.

Challenges

The context of this research provides an important and valuable learning opportunity for those interested in the role of technology in organizational change and knowledge sharing given a number of challenges. Looking at a public sector organization provides a different focus with different underlying organizational factors. The internal and externalenvironments of the police introduce a challenging mix of tasks, roles, social contexts, work environment, political and public concerns to this research.

Public Sector Organization

The majority of organizational theories and frameworks looking at technology adoption and impacts result primarily from studies focused on private sector organizations. Organizational motivators in business include the ability to reduce a product's time to market (Noori 1990), successfully compete with rival organizations, increase profits, increase market share (Johnson and Vitale 1988, Synnott 1987). Individual motivators for people in business to adopt technologies for knowledge management usually exist in parallel with organizational goals, in the form of monetary gain through stock incentives and other rewards (DeLong 1996).

However, one could argue that the organizational and individual motivators surrounding organizational change and new technology use in public sector organizations are quite different from those previously studied in the private sector. The public sector lacks the competitive and first-mover advantage mechanisms that influence new technology use in the private sector (Rocheleau 1993). Although the public sector provides an interesting context for organizational research, there is little research in this area (Kraemer and King 1986, Manning 1996, Robey and Sahay 1996). Given the need for technology as a result of large amounts of digital information available and the organizational characteristics inherent in public sectors, this setting makes it a particularly interesting area for research.

Internal Environment

The internal environment of a police department provides a challenging yet attractive aspect to this research. Given that police deal with much uncertainty in the field (Manning 1977), it is not surprising that the organization is highly structured to help eliminate uncertainty and secure internal discipline (Bittner 1990). The culture and structure of police agencies and other paramilitary organizations presents a strict chain of command often limiting the communication structure within the agency. An individual's reward structure is often competitive, pitting officers against fellow officers for promotion, also preventing knowledge sharing between different teams in the police agency (Maltz, Gordon and Friedman 2000). For police departments, these inherent organizational motivations of distribution of power, status and authority (Manning 1996), security, and privacy (Schellenberg 1997) coupled with life or death consequences make the police environment as extremely rich context to study organizational behavior and change.

Police functions and services consist of a combination of different tasks resulting in the need for various skills, such as people and communication skills, analytical skills (Maltz, Gordon and Friedman 2000), and physical skills (Bittner 1990, Van Maanen 1982). This mix of skills and tasks are distributed within the police organization to different groups. Groups based on role or rank,

such as civilian crime analysts, patrol officers, special crime detectives/investigators, and commanders have different tasks and goals within the context of police work (Maltz, Gordon and Friedman 2000). Furthermore, there is the division of officers based on geographic areas. The separation of officers into teams stationed at different locations fosters an in-group/out-group distributed work environment. The organizational culture and structure of the police and the mix of individual and group roles and tasks provide a challenging perspective for conducting in-depth field research.

External Environment

The relationship between the police and the community is enigmatic. On one hand, the police work to serve the public by fighting crime and building relationships with the community (Moore and Stephens 1991). On the other hand, in our democratic government system, the police must account for its actions and continuously undergo scrutiny by the public and the media. With this public oversight and given the high workload (Maltz, Gordon and Friedman 2000), the politically charged relationship between the police organization and its external environment results in an interesting mixture of forces influencing police work. This environment may influence how new technologies are perceived and used.

Theoretical Foundations

This research draws primarily from the extant literature on knowledge sharing and organizational change.

Knowledge Sharing and Communication

Knowledge sharing is changing the work process, as we know it. The ability to utilize technologies to capture and share knowledge is key to business functions. Knowledge transfer in organizations, which can result in increases in performance, is difficult to execute successfully (Argote 1999). Knowledge transfer is the "process through which one unit (e.g., individual, group, department, division) is affected by the experience of another" (Argote, Ingram, Levine and Moreland 2000 p. 3). Knowledge transfer at a department or division level that allows this knowledge to become incorporated into the organizational structure results in organizational knowledge management.

The means and patterns by which people communicate and collaborate can lead to the creation of knowledge. In an interesting study, Inkpen (1996) investigated the effects of collaboration on knowledge creation. He found that organizational learning occurs when the outcome of collaborative efforts or encounters becomes shared throughout the organization. Not only is it important to look at how this process occurs, it is also important to look at between whom this occurs. Communication inside of and outside of groups is an important facet of knowledge sharing. In-group communication or internal knowledge sharing involves individuals who typically work together on a daily basis and are most often supervised by the same person. Out-group communication or external knowledge sharing involves individuals with little or no daily collaboration, often working at a distance, with different supervisors (Zenger and Lawrence 1989). While in-group communication seems more likely, out-group or external communication has been found to result in higher ratings by top management (Ancona and Caldwell 1992).

Although there are many studies that posit that communication and knowledge sharing can result in positive outcomes, such as increased performance, research on the deployment of knowledge sharing and collaborative technologies have also found that technology can have unexpected and unintended consequences on the organization. Examples of this include the unintended effects of email (Sproull and Kiesler 1986), cellular phones (Manning 1996), or even the "unexpected" lack of effect from a collaborative information system (Vandenbosch and Ginzberg 1996/1997). Thus, adopting technology to instigate changes in knowledge sharing and other work practices requires a more in-depth examination of the organizational change research is warranted.

Organizational Change

In conducting research on organizational change, it is important to understand that technology does not necessitate change, but instead provides an opportunity for change (Barley 1986). Furthermore, technology does not determine social practice, although it can serve to facilitate and constrain practice (Orlikowski 1992). Studies on organizational change should not only study

technology use, but also the social context (Zack and McKenney 1995), structure (Tsai 2002) and norms (Kraut, Rice, Cool and Fish 1998), and the organizational structure and culture.

Inherent in the nature of organizational change research is the concept of time and observing the process of change unfold through process theory research (Markus and Robey 1988, Robey and Boudreau 1999). Collecting data over time to understand the interplay of forces is important for discovering the changes that result from the introduction of information and knowledge sharing technologies (Manning 1996, Orlikowski 1996). The variable of time allows us to investigate organizational change through the incorporation of the logic of opposition (Robey and Boudreau 1999). This approach views organizational change as a process that occurs as a result of the interaction between existing persistent structures in organizations and the new intended structures (i.e., technologies). This approach to the study of technological impacts allows us to investigate changes within the organization while incorporating the analysis and interpretation of complex social processes that exist within police agencies. It is evident from previous research (e.g., Barley 1986, Robey and Sahay 1996) that technology has the potential to transform work in different ways, given the organizational context surrounding the technology adoption process. The police context lends itself well to the view of logic of opposition. Both within and outside of the organization, we can sense opposing forces stemming from traditional police culture and the need to adopt and use new technologies.

Research Model and Research Questions

The general model sketched in Figure 1 serves as the initial guide for this research. Based on previous discussions on the utilization of mixed levels of analysis (Markus and Robey 1988, Orlikowski 1992), individual, group, organizational, and current technology use factors will be studied as both independent and dependent variables, and interventions can be directed through change in technology and through social practices (i.e., communication and knowledge sharing processes). The column on the left of the figure reflects the factors that influence social processes in police departments. These factors include individual differences, organizational culture, incentive systems, group characteristics, and technology. In the second column, we show the main theoretical intervening processes to be studied. Mediating factors of communication and knowledge sharing affects outcome measures such as performance, knowledge effects, perceptions of work and work processes. The model also includes the introduction of technology change and its moderating effects on social processes as well as outcome and work measures. Over time, organizational change, which we argue stems from changes in the outcome and work measures, influences the original individual, group and organizational factors that we have identified. The research questions that this study addresses is to understand the individual, group, organizational, and technological factors that exist in the police organization and their relationships to communication, knowledge sharing, and other work practices. As the organization adopts new technology, we will be able to understand the direct and indirect effects of this technology on the relationships described above.

Research Methodology

The research methods employed in this longitudinal field research study include both multiple qualitative and quantitative methods of data collection, which provide a rich set of data that can be used for triangulation (Eisenhardt 1989). Surveys, semi-structured interviewing, documentation review (from archives and other departmental resources), and system log files will be collected. Given the rich context of the study, ethnographic techniques (see e.g., Van Maanen 1982) will also be used to enhance the findings of the research. As mentioned, given the interdependence and complexity of knowledge sharing and organizational change in an organization, this study will examine data at different levels of analysis (Markus and Robey 1988).

Participants in this research project will consist primarily of two geographical police patrol divisions from the partnering police organization. With approximately 250 patrol officers, 28 sergeants, 6 lieutenants, and 2 captains, the sample size for this project is suitable for statistical analyses. As is sometimes the case, technology adoption changes not only the work of those using it, but also others in the organization. Therefore, interviews with other police personnel (such as IT staff and detectives) will also be conducted.

Two strategies will be used to investigate the process:

Within Group. To compare changes over time for those using the technology (i.e., before and after technology introduction), extensive initial data collection will be used to establish baseline measures of current work processes before the implementation of the technology. This will allow for the monitoring of changes in work for a group as the technology is implemented.

Between Group. The study will investigate the use of technology as a mediating factor to compare two groups, one with the technology (experimental group) and the other without the technology (control group), by capitalizing on police department's rollout process. For a period of 6 months, one patrol division will serve as the experimental group with technology, while the control division will not use the technology. This will allow us to continuously collect measures of changes in work over time and to account for changes due to environmental factors rather than the technology itself.
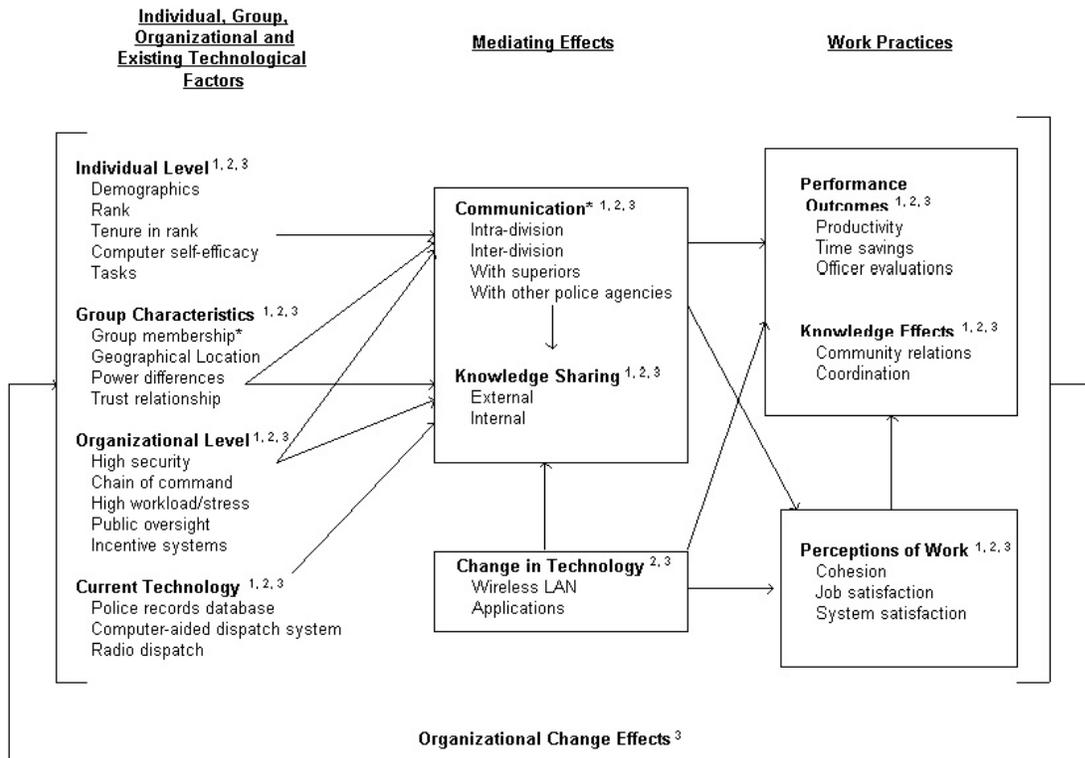
Note. Numbers in superscript indicate the phase of the study in which variables will be measured. For example, a superscript of [1,2,3] indicates that the variable will be studied in all three phases of the project.
*Includes both formal and informal distinctions

Figure 1. Research Model

Research Phases

This research is broken down into three phases, as illustrated in Figure 1:

Phase 1. Effects of individual, group, and organizational factors on police work practices

This initial phase will serve to validate our original model in the context of police work. This model is based on previous literature on the effects of individual, group, and organizational factors on communication and knowledge sharing. It focuses on establishing baseline measures of current work processes and understanding the relationships in the model. Established scales will be used where possible. However given that there has not been much research looking at these factors in police departments, other measures will need to be developed (e.g., accessing quality of work). This phase has begun and will last approximately 3 months and will include multiple data collection methods, such as surveys, semi-structured interviewing, documentation review (from archives and other departmental resources), system log files, and observation, for data triangulation.

Phase 2. Effects of knowledge management technology implementation on communication, knowledge sharing, and work practices

Phase 2 of this research will focus on the effects of new technology implementation on the outcome measures of performance and work practices. Previous work has looked at the changes in private sectors outcome measures given technology adoption (Johnson and Vitale 1988, Synnott 1987). The goal of this research is to extend these findings to investigate if these relationships hold true for police departments, given the organizational structure and culture that exists. This field study will investigate the longitudinal effects of different technologies on work processes and outcome measures. We will employ similar methods in the previous phase to allow for comparison of measures over time. This phase should last approximately 6 months and is planned to start by July with the deployment of the wireless LAN applications in the patrol vehicles.

Phase 3. Organizational change: Effects of work practices on individual, group, and organizational factors

Phase 3 revisits our original model, investigating the changes in the organization introduced with technology adoption. We will draw upon the data collected over the duration of the program to investigate long-term organizational change to study the role that technology plays in influencing the individual, group, and organizational factors in police agencies. It is anticipated that this phase last approximately 3 months.

Expected Contributions

The expected contributions of the proposed research apply to a number of disciplines by enhancing our understanding of organizational change by investigating the role that new technology use plays in the organizational context of the police. In police agencies, the use of technologies is important since it provides an opportunity for extensive information access and knowledge sharing. Increased collaboration can drastically change the landscape of police work, thus affecting law enforcement practices in our communities. The ramifications of changes in police work reaches far beyond the boundaries of the policies and practice of law enforcement to other government agencies, such as the judicial and penal systems.

However, technology implementation does not guarantee effective use of technology. This research serves as a valuable opportunity to investigate the processes and changes that occur at the individual, group, and organizational level given the introduction of new technology. For those studying organizational behavior and information systems, the organizational context of the police in this research enhances the extant literature that have focused primarily on private sector organizations by looking at the public sector. In order to maximize the benefits of an information technology and fully realize the results of these technologies, it is imperative that we be able to understand the effects that technology adoption can have in public sector organizations. This research will also allow police and funding agencies to better gauge the effects of technology implementation, which may result in the better allocation of resources and planning for future needs given the implementation of these technologies.

In the domain of police agencies, the use of new technologies provides a bittersweet solution for police. These technologies have the potential to augment knowledge management and sharing practices that would benefit the police organization in its goal to protect the public. The ability to access and share knowledge can help officers and detectives become better decision-makers. With increased knowledge of crime in the community, police management will be able to better allocate resources. With the aid of good analysis techniques, good design of technology, and an environment conducive to the usage of these technologies, law enforcement agencies can benefit greatly from these technologies. And, in the end, better law enforcement means a safer environment for the public.

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