

Organization Antecedents of Successful IT Management

Abstract

As local law enforcement organizations continue to embrace IT, the successful management of these technologies will continue to have expanding implications for the municipal organization. The emergence of the IT state and the risks associated with the accelerated rate of technological change places law enforcement professionals in a precarious position: balancing the needs for public safety with organizational efficiency and effectiveness concerns. This paper reports the findings of a study examining the role of law enforcement leadership with regard to the successful management of IT. This study assumes that the degree to which senior leadership embraces IT and appreciates the dynamic characteristics of the technologies themselves results in a greater level of success integrating technology into organizational operations.

1. Introduction

Information technology has proven to be a powerful catalyst for both organizational and social change. Nowhere has this become more evident than in law enforcement initiatives. In our post 9/11 society, it would seem that local public safety exists side by side with National security concerns. While the everyday environment of local law enforcement has made significant strides into information technology usage and development, it is our expanded desire for security that has taken the field of law enforcement into the next level of technology usage.

The study presented here focuses on California police departments with specific attention being placed on police chiefs. The rising tide of citizen demand, the need for more effective approaches to dealing with information technology, and the increase in security nationwide has extreme implications for law enforcement.

2. Background

In the past, many organizations did not seek to use IT as a dramatic enhancement to organizational outcomes—today there is no doubt that IT now represents a critical resource in organizations. Certainly, in the wake of 9/11 and subsequent concerns for public safety, law enforcement has made deliberate progress toward an expanded role for IT in

their organizations (eg., coordinating regional law enforcement efforts among various local agencies). This expanded role brings with it the need for more thoughtful and expert leadership, an inherent cultural change, and an increase in the day-to-day functionality of organizational processes.

Organizational executives—in this case, police chiefs—find themselves leading the IT charge as opposed merely keeping up with it. Just as CEO's have had to enhance their understanding of the role of information technology and increase their own expertise levels—so too have executive level leaders in public organizations (Watts, 2001). As the organizational IT leader, police chiefs have had to become part of what Boynton, Zmud, and Jacobs referred to as “the IT knowledge structure” (1994). Meaning, they no longer have the luxury of being simply “briefed” they must now take on the personal responsibility of making sure they are fully informed. The implications of this new leadership role are far reaching from an organizational perspective. IT leadership creates a flow within the organization, setting the stage for an internal IT knowledge structure which shapes organizational culture—ultimately affecting the overall functionality of organizational processes. The management of IT is no longer just for managers (Bassellier, Reich, Benbasat, 2001). The future effectiveness of any IT initiative may be traced to top-level leadership. In other words, how well IT is used in the ultimate fulfillment of organizational goals may be directly tied to how well the IT leadership role is carried out.

The purpose of this study is not to measure IT effectiveness but instead—to explore the role of organizational leadership and its implications for successful IT management.

The importance of this study is based on the understanding that leadership shapes culture and in doing so also has a key impact on organizational functionality in the form of change management, technological change initiatives, and management process.

3. Methodology

In order to begin to assess the organizational realm, a survey was used to gather data on information technology management in California police departments. An email went to 331 police

chiefs in California providing a link that took them to an electronic survey. Of the 331 police chiefs who were included in this study, 166 responded resulting in a 50% response rate.

The survey was made up primarily of Likert-scaled responses prompting the chiefs to respond to a series of statements about their perceptions as to how information technology is managed within their respective police departments, the impact of information technology on police operations, and the role of leadership influencing the management of IT. There were a small number of questions utilizing other formats (e.g., ranking, choosing among possible options and fill in the blank).

The survey was intended to develop a set of descriptive statistics on IT management implications in police departments as well as explore multi-variate associations dealing with the following issues:

- Whether the police department keeps up with the dynamic nature of IT product change in the marketplace
- The rate at which the department responds to IT changes.
- Whether IT is used to promote organizational change in the department
- The effects of internal and external stakeholders in IT management
- The role of department leadership in IT management
- The impact of various organizational capacity attributes on IT management

3. Survey Results

The results of the survey strongly suggest that police chiefs are keenly aware of the importance of IT management in police operations and respond that IT issues and concerns frequently arise in their departments. They also respond that, on average, 13% of their workday is spent dealing with the department’s IT needs and concerns. Importantly, they also perceive overwhelmingly that IT changes at a much faster pace than can be assimilated by their departments.

In terms of how IT is managed throughout the municipality, approximately two-thirds of the respondents stated that the management of IT is primarily centralized in a single city department. While two-thirds of the respondents felt that the specialized IT needs of police operations were not well understood by other city departments, only about

40% felt that “turf” battles about IT needs exist between the police department and other city departments.

As can be seen from Table 1, approximately 50% of the respondents perceive that their department is keeping up with changes in IT products and that these products do not make it difficult to manage IT. However, nearly a third of the respondents feel that the nature of the products in the marketplace make managing IT difficult for their departments. Importantly, police chiefs perceive that IT generally changes at a much quicker pace than their departments can assimilate. It appears that although police departments have the organizational capacity to keep up and manage IT changes, they lack the ability to fully incorporate these changes into their workplace.

Table 1 Percentage Distribution. Responses to statements concerning Police Department reaction to IT products in the marketplace

	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
Keeps up with IT product changes	8.2%	42.8%	13.2%	32.1%	3.8%
Nature of IT products makes IT management difficult	3.1%	29.6%	17.6%	42.1%	7.5%
IT products change at a quicker pace than the department can assimilate	23.6%	56.1%	8.3%	12.1%	0%

The literature and common sense thinking on IT management is replete with discussions regarding the impact of organizational culture as well as a generational differentiation between IT expertise and adaptability to technology. There is little doubt that organizational culture can foster or hinder the efficacy of IT as it is used and managed (Park, Ribiere, and Schulte, 2004). In addition, there exists an important relationship between individuals, their personal understanding/feelings about IT and their role in the shaping of organizational culture (Sheng, Pearson, and Crosby, 2003). Most importantly—with regard to this study—is the role that the executive officer plays in shaping the culture of the

organization and in the management and development of IT (Watts, 2001).

Part of this culture seems to have fostered the perception that there is a distinct “generational gap” with regard to IT understanding, expertise, and usage. Although little research exists detailing a comparison of age and adaptation capacity with regards to IT, the findings illustrated in Table 2 mirror the common sense notion that younger workers are perceived to be more adaptable to IT changes than their older counterparts.

The results regarding the impact of organizational culture are a little more difficult to interpret. When queried about their own departments, the results were essentially split. Approximately one-third of the police chiefs feel that their department’s organizational culture makes it difficult to implement IT changes. However, the majority does not perceive their department’s organizational culture to be an impediment to managing IT.

Table 2. Percentage Distribution. Responses to statements concerning perceptions of organizational culture and workforce issues.

	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
Younger members adapt easier to IT	34.8%	52.5%	5.1%	7.0%	0.6%
Org culture makes IT changes difficult	4.4%	29.7%	7.6%	51.9%	6.3%

Similar to the wealth of literature on organizational culture and workforce issues, there exists a body of thought that assumes that departmental stakeholders, both within the city senior management staff and elected officials as well as those external to the municipality organization chart (e.g., citizen and business groups), have an influence on managing IT. Table 3 depicts the results of a series of questions aimed at ascertaining which stakeholder groups were perceived to be driving IT changes in police departments in California. The stakeholder groups were: citizen needs and demands, business community needs and demands, elected officials needs and demands, and other departments within the city needs and demands. From the responses, it appears that compared to the other groups, citizen needs and demands have a greater influence on IT decisions in police operations. This makes intuitive

sense given the public safety role of police operations in ensuring a safe community for the town’s residents. Anecdotal evidence from informal discussions with police department personnel suggests that citizen needs and demands include data processing, responding for calls for assistance, and record keeping technology functions as well as ensuring and maintaining privacy of information and data.

Table 3 also shows that generally police chiefs’ perceive that both the senior management of the city as well as the city council understand the value of IT. There is a level of uncertainty among about approximately 20% of the respondents as to whether their city councils understand the value of IT. This could be due to a specific lack of interaction with the council on this issue or a more general lack of interaction with the council (it may be that in some council-manager cities, the city manager has the greatest dealings with council members and department heads play a more limited role with the council). Nearly 15% of the respondents perceive their councils as not valuing IT. In previous research by the authors, it was found that city staff perceives council members to more interested in procurement items that are more visible to the electorate (e.g., water towers, police squad cars, fire trucks, redevelopment activities) (*,*). In comparison, IT purchases tend to be relatively transparent to the voters and, therefore are more difficult item to get the attention of elected officials’.

However, the impact of citizen groups is diminished when compared to the demands of the police department per se, as well as the perceived need to coordinate law enforcement agencies in an entire region through IT processes. Table 4 shows the results of controlling for internal and coordinating functions. Respondents were overwhelming in their response which identifies the police department’s needs and demands as the primary agent of IT change and to a lesser extent the need to coordinate regional law enforcement systems. Importantly, not a single respondent identified citizen or business groups as primary change agents in the police department’s IT management decisions.

Table 3. Percentage Distribution. Responses to statements concerning influence of internal and external stakeholders.

	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
Senior management of the city values IT	26.2%	55.6%	8.1%	6.9%	3.1%
City Council values IT	11.2%	53.1%	21.2%	11.9%	2.5%
Information needs by citizens drives IT change	6.3%	41.5%	25.8%	25.2%	1.3%
Information needs by business community drives IT change	0.0%	22.5%	25.6%	48.1%	3.8%
Information needs by elected officials drives IT change	0.0%	21.9%	23.8%	47.5%	6.9%
Information needs by other departments drives IT change	0.0%	21.9%	15.6%	57.5%	5.0%

It is difficult to assess the differences between Table 3 and Table 4. It would appear that although citizen groups are acknowledged as an important influence, this influence is moderated through departmental needs as well as through regional law enforcement concerns. It very well could be that citizen needs and demands as well as other external stakeholders needs and demands are a more distal factor that, in turn, influences the more proximal or immediate needs of the department and regional law enforcement concerns and efforts. Interestingly, in a question dealing with whether information and data sharing between the department and other law enforcement agencies in the region is made difficult due to IT, one-third of the respondent perceived IT did make it more difficult. This suggests the need for a more strategic effort to coordinate information sharing across different platforms and to seek regional solutions to IT needs rather than one municipality at a time.

Table 4. Primary Agent of IT Changes

Changes in IT in the Police Department are primarily a product of departmental needs and demands	83.1%
Changes in IT in the Police Department are primarily a product of trying to coordinate law enforcement agencies' needs and demands in the region	16.9%
Changes in IT in the Police Department are primarily a product of citizen groups' needs and demands	0.0%
Changes in IT in the Police Department are primarily a product of business group's needs and demands	0.0%

As previously mentioned, there exists a common wisdom among city staff that IT products are a difficult “sell” to elected officials due to the products’ rather invisible nature to both elected officials as well as citizen (voters) in general. Similarly, it can be argued that senior management of the city (e.g., the city manager and his/her deputies and assistants) would act as gatekeepers, by limiting the amount of IT requests going to council for approval, and instead focusing on the more visible procurements that appease the council members’ desire to demonstrate visibly their benefit to the city. In this line of reasoning, in the budgetary process police chiefs need to sell their IT requests to two groups: first, to senior management and then, secondly to the council.

Table 5 shows the results of the impact of budgetary considerations in the management of IT in California police departments. One-half of the respondents felt that IT management is negatively impacted by the annual nature of municipal budget cycles. In informal discussion with police chiefs and based on past research by the authors, it is clear that there is a strong perception that rate or pace of IT change and the incremental nature of the budgetary process do not easily mesh for an orderly IT management strategy.

The results depicting whether IT changes are a difficult “sell” to senior management of the city and the city council are mixed. It would appear that it is slightly more difficult to make the pitch for IT change to the senior management of the city as compared to the city council. This may be a product of the gate keeping function of senior management: allowing only those IT projects to be pitched to council that senior management deems essential and

items that senior management perceives council would be supportive towards.

Table 5. IT Management and Budgetary Considerations

	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
IT management is made difficult because of budget cycles	7.5%	42.5%	16.2%	31.9%	1.9%
IT changes are a difficult budgetary "sell" to senior management	5.6%	31.2%	16.2%	43.8%	3.6%
IT changes are a difficult budgetary "sell" to the city council	5.0%	21.9%	15.6%	57.5%	5.0%

Police chiefs were asked about their perceptions to the reaction of their departments to the need for IT changes. They were asked to select whether their department reacted with small, incremental steps; moderately; or quickly with sweeping changes. It was assumed that the modal response would be slow and incremental followed by moderate and then those identifying quick and sweeping changes due to the bureaucratic and paramilitary organization of police operations.

The results in Table 6 however suggest that most chiefs perceive their department's response time to be at a moderate pace. Somewhat amazingly, 5% of the chief's perceive their departments to react quickly with sweeping changes. It is not known for sure but this may be caused a few departments that needed to update their IT very antiquated IT systems in short order.

Respondents were asked to rank five organizational characteristics from the most influential to the least influential in terms of successfully managing IT in their department. These five characteristics were: (1) Successful IT management is a function of the monetary resources available to the department, (2) Successful IT management is a function of the capacity of the police department's employees to understand and utilize IT, (3) Successful IT management is a function of the commitment of the city's senior management to IT,

(4) Successful IT management is a function of the commitment of the city council to IT, and (5) Successful IT management is a function of the commitment of the police chief to IT. Table 7 depicts the results showing the mean average score each of the characteristics in rank order.

Table 6. Reaction to IT Change Needs

Reacts incrementally making a series of small, incremental changes	40%
Reacts moderately making a series of moderate changes	55%
Reacts quickly making a series of large, sweeping changes	5%

One of the underlying normative assumptions of this research is that successful IT management can be defined as a combination of three attributes: (1) the ability of the department to keep up with changes in IT products in the marketplace, (2) department leadership that has a significant amount of influence in the management decisions regarding IT in the department, and (3) a commitment to use IT as an instrument for organizational change.

Table 7. Organizational Characteristics of Successful IT Management

Organizational Characteristic	Mean Average Score (1=most influential)
Successful IT management is a function of the commitment of the police chief to IT	3.54
Successful IT management is a function of the monetary resources available to the department,	3.51
Successful IT management is a function of the capacity of the police department's employees to understand and utilize IT	3.06
Successful IT management is a function of the commitment of the city's senior management to IT	3.02
Successful IT management is a function of the commitment of the city council to IT	2.72

Table 8 depicts the responses to those three attributes. The majority of the respondents perceived their departments to share these three attributes. When asked if their departments keep up with IT product change in the marketplace over half believe they do and over three-quarters state they have used IT to promote organizational change within their department, and (not surprisingly) chiefs perceive

themselves to have a significant influence over their department's IT management.

Table 8. IT Management Attributes

	Strongly Agree	Agree	Neither	Disagree	Strongly Disagree
Department keeps up with changes in IT products in the marketplace	8.2%	42.8%	13.2%	32.1%	3.8%
IT is being used to promote organizational change in the department	9.5%	65.8%	17.7%	6.3%	0.6%
The chief has a significant amount of influence in the management of IT	33.8%	59.4%	5.0%	1.2%	0.6%

A stepwise linear regression analysis was conducted the dependent variable constructed as an additive index of the three attributes depicted in Table 8. The results of this regression analysis are shown in Table 9. If our normative assumption that successful IT management requires leadership, ability to keep up with IT product changes in the marketplace, and the use of IT as a vehicle for organizational change. The seven (7) independent variables depicted in Table 9 account for 47.9% of the variation in our dependent variable. The following summarizes the assumed impact of the independent variables:

- *Senior Management of the City Values IT* - this shows a positive relationship with our dependent variable. It stands to reason that the more that the senior management of the city values IT the more likely it will be that IT can be used as an organizational change tool by a police chief. This chief being the individual who is expected to have both desire and influence in IT decision making, as well as the commitment to ensure that the department keeps up with changes in the marketplace. In addition, he/she must also have the wherewithal to use IT beyond a simple data storage/retrieval system to usage which values IT as an organizational change tool.
- *Organizational Culture makes IT Changes Difficult* - this shows an inverse relationship with our dependent variable. An organizational culture that is not conducive to IT will certainly

hinder successful IT management. The ability to use IT as a change tool will be met with resistance as will attempts to understand the IT products in the marketplace.

- *Department places too much importance on IT*- this shows an inverse relationship with our dependent variable. Similar to the organizational culture impact, if the chief feels that the department places too much importance on IT, he/she is sending a strong message to subordinates about the limited role of IT in the department.
- *IT changes are a difficult budgetary sell to senior management*- this shows an inverse relationship with our dependent variable. This inverse relationship means that more difficult senior management makes changes in IT possible, the less successful the police department can be in managing IT.
- *Younger members adapt easier to IT changes* - this shows a positive relationship with our dependent variable. The implication here is that those departments with a younger workforce seem to be correlated a with more successful IT management practice.
- *Information needs by the business community drives IT change*- this shows a positive relationship with our dependent variable. It could be argued that the more the business community is seen as a driver of IT change, the easier it will be for the department to successfully manage IT. In this case the business communities relationship to IT change is characterized as rational and professional with regard to their desires—as compared to elected officials or citizens, who may be categorized as more emotive.
- *Information needs by elected officials drives IT change*- this shows an inverse relationship with our dependent variable. As argued above, if the logic of the business community is more rational than the political community in their IT needs and desires for the police department, then this inverse relationship makes sense. The IT demands of elected officials may not be linear, rational, or strategic, thus placing a serious constraint on successfully and strategically managing IT in the police department.

Table 9. Stepwise Linear Regression Results.
Dependent Variable: Additive Index of IT Management Attributes

Independent Variable	Standardized Coefficient	t- value	Cumulative Adjusted r-square
Senior management of the city values IT	.369	5.61	.323
Organizational culture makes IT changes difficult	-.246	-4.03	.367
Department places too much importance on IT	-.167	-2.61	.403
IT changes are a difficult budgetary sell to senior management	-.180	-2.77	.422
Younger members adapt easier to IT changes	.179	2.80	.448
Information needs by the business community drives IT change	.201	3.02	.460
Information needs by elected officials drives IT change	-.166	-2.51	.479

Taken as a whole, the regression analysis findings point to the notion that successful IT management is supported by an organizational context that values IT—and that internal and external stakeholders, as drivers of IT change, play an influential role. Importantly, there seems to be differences in how these stakeholder groups impact IT management. For the more external stakeholders, there was a lack of significant correlation of the independent variable dealing with citizen groups, while the business community and elected officials showed strong association (albeit, in different directions). The category of internal stakeholders showed that senior management of the city played a role in IT management in the anticipated direction of association; when senior management valued IT this enhanced IT management in the police department and when IT was perceived to be a tough sell to senior management this negatively impact IT management. Interestingly, there is a lack of literature on the impact of generational issues of age and its influence on IT management. The common

sense wisdom that it is easier to make IT changes with a younger workforce is borne out by the perceptions of the police chiefs. It would appear that this is an area that deserves greater research scrutiny.

4. Conclusion

The use of IT as a change catalyst in law enforcement agencies moves IT from merely an organizational efficiency tool towards a vehicle for strategic organizational change. The importance of IT has expanded in the post 9/11 world's emphasis on security and public safety.

This study provides several key management implications. First, it is clear that leadership plays a critical role in developing an organizational culture in which technology is valued, both within the department and the municipality. Additionally, managers must set the tone for their departments by keeping pace with changes in the marketplace. Finally, the successful integration of technology in a department is most directly a function of the degree to which senior managers embrace IT as a means of effecting organizational change.

The management implications of this study reinforce the role of leadership for setting the tone concerning the importance of IT and its value in the organization. Managers need to focus their attention on creating a culture that keeps abreast of technological innovation and sees IT as a means to strategically manage the organization. Managers also need to be aware of the role stakeholders' play in influencing IT decisions within their agencies.

Finally, the research implications of this study point to the need to further assess the genesis of an IT-friendly organizational culture. Questions dealing with workforce demographics, in general, and worker age, in particular, need to be explored.

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