

# **ALTERING LEADERSHIP THINKING AND ORGANIZATIONAL BEHAVIOR THROUGH WEB SERVICES**

**SENIOR SERVICE COLLEGE FELLOWSHIP STRATEGY RESEARCH  
PROJECT (SRP) REPORT**

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## **ABSTRACT**

Implementing information technology (IT) solutions within government organizations is difficult, especially when a causal effect on their culture may result. The proliferation of Web 2.0 services is enabling information sharing among employees and leaders. Regrettably, this level of information sharing is complicating efforts to maintain the status quo of the government's traditional need-to-know policy. In this study, the researcher investigates the relationship between Web services, commonly called Web 2.0, and the influence these services wield on organizational behavior. To support the analysis, an IT organization and an Army battalion were chosen as test cases. The results from their study highlighted the need for certain Web services and behaviors that may cause a shift away from established methods of information sharing.





## **CHAPTER 1 INTRODUCTION AND RATIONALE**

The rise of Information Technology (IT) is arming employees, managers, and senior leaders with large amounts of information. Senior managers are communicating directly with the workforce, and those who are between these communication chains feel threatened. The very culture in which federal organizations control information, both horizontally among organizations and vertically through the chain of command, is being threatened by these information technologies. These technologies are an amalgamation of Web services commonly called Web 2.0.

In the public sector, and especially in military organizations, leadership desires to control information within their chains of command through various venues such as Public Affairs Offices or News Services; quite naturally, they become concerned about public perceptions and how others may use and interpret this information. Within the government, the traditional view is to protect information, minimize its distribution, and ensure the information has been reviewed by the appropriate level of management prior to its release. Several legitimate reasons exist for such limitations; however, the underlying cause, according to Kraemer and King (2005), is that "...Most government organizations are bureaucracies with hierarchically organized distribution of authority, resources, and responsibilities flowing downward to the work units...."

Government managers have worked hard through the years to refine this process, are trained in the most effective way to utilize this structure, and fully understand how stepping outside the boundaries of this structure can detract from the leader's goals. Web services now make this information available internally and externally to almost all components with very little effort required to obtain it. The very process government officials have worked hard to

refine is quickly morphing into something different where collaboration and direct access are becoming the norm.

A plethora of studies and research abounds concerning the different internal and external factors that affect organizational behavior and its culture. Many of these studies show the insertion of information technologies is a significant enabler for increased efficiency and has little to no effect on an organization's culture and behavior. This researcher would tend to agree with this conclusion as most of the IT solutions did not provide ready access to information that could be shared among groups and teams. Web 2.0 now makes the sharing of information simple and easy, essentially creating virtual integrated product teams where knowledge sharing is enhanced.

Burkhart and Brass (1990) concluded the total amount of individual influence increased as individual centrality increased and the network became more interconnected. This research showed as individuals gained knowledge, their power base grew. What this researcher wants to know is what happens to the organizational culture when the organization as a whole gains knowledge? Are leaders willing to share information or put processes in place to prevent it? Do employees use this information to gain power and for political gain? Does the sphere of influence diminish as more individuals have the same information? Clearly, an element of trust and transparency must exist as information becomes more accessible and ever increasing pressure is placed on the managerial structure. If the leaders and employees have direct access to one another, what happens to middle management?

Just as the computer has changed the way the world operates today, Web services can potentially have the same effect on organizations. This researcher sought some insight into the effect Web technology is going to have on behavior, how it will affect organizational culture, and what employees, managers and leaders need to prepare for as this technology continues to

proliferate. This insight can then be used to shape organizational structure, to implement processes and procedures for the use of this technology, and to acquire the right technology, which aligns cultural values with accessibility of information.

## **Background**

Quite often, technology is implemented into organizations with the desire of leadership to alter behavior, change culture, or improve communications (Jackson, Poole, & Kuhn, 2002, pp. 236–253). Over 50 percent of today's military were born after 1980—these fine personnel come wired through the digital age expecting to use the tools that are available to them. In this case, technology is entering the workforce, and leadership is just now learning how effective this technology can be used. Web 2.0 is a powerful technology, enabling organizations to collaborate, share information, and receive real-time updates on critical information. This free flow of information suggests the government's ability to control information is changing, and a new status quo is emerging (O'Reilly, 2004). The need to share information is overtaking the need to protect information. This researcher infers from this shift culture that organizational behavior is affected by this change. Understanding how this change affects behavior is essential to building effective organizational structures, implementing sound policies, and developing future leaders. The intent of this research is to take a step forward in this learning process.

## **Statement of Purpose**

The basis for this paper is to explore how Web 2.0 services are being used at the battalion and directorate level. Are there specific motives for using them? Do these technologies enable collaboration? Are there political goals leaders and organizational members hope to achieve? Are the leaders of these organizations looking to cut down on bureaucracy and the number of middle managers? These are questions leaders at this level and even higher are wrestling with today. This research will provide leaders a general guideline of steps they can take to assess what Web

2.0 technologies will work best for their organization and what policies need to be considered prior to implementation.

### **Overview of the Methodology**

This research project will follow an applied research methodology, research performed will be of the descriptive category, and qualitative data will be collected through literature reviews by surveying two control groups. One group will be a battalion of soldiers, and the other will be a government directorate whose mission is to deliver data products and infrastructure for those who can use Web 2.0 and other IT services. The data will be sorted along officer, noncommissioned officer, and enlisted ranks for the battalion; and managers, team leaders, and all other employees for the civilian organization. A review of current survey instruments available for applicability will also be conducted, and Web 2.0 services will be utilized to conduct the survey.

### **Research Question**

How are Web 2.0 services being used at the directorate and battalion level? Does the organizational design and mission affect for what and how these tools are used?

### **Research Hypothesis**

The Army and the government in general are slow to adopt technology changes, primarily due to security and cultural concerns. Web 2.0 services are changing this thinking as leaders have discovered the powerful use of these tools. This discovery is altering the way organizations and leaders are responding and utilizing these technologies, and is fundamentally changing the hierarchical behavior approach to sharing and acting on information.

## **Definition of Key Terms**

**Battalion**—In the United States Army, a battalion is commanded by a lieutenant colonel and varies in size, but usually has a personnel range between 300 to 1,000. A hierarchical structure is in place for officers and enlisted ranks. Normally, the senior enlisted soldier is the command sergeant major at the E-9 level.

**Blogs**—Blogs are websites where visitors can make journal-style entries on a topic of interest. The blog usually starts with a column or comment, which is posted online, and then others log on to the post and make comments as well. These posts are displayed in a reverse chronological order.

**Crowdsourcing**—Crowdsourcing is the act of taking a job traditionally performed by a designated agent (usually an employee) and outsourcing it to an undefined, generally large group of people in the form of an open call (Howe, 2006). When using Web 2.0 technologies, crowdsourcing provides a forum to achieve high-impact solutions by posting a specific challenge on a company, organization, or Internet website, and encouraging the audience to provide suggestions on how best to solve the problem.

**Directorate**—A directorate is an agency within a command structure headed by a director and normally assembled around divisional and branch functions.

**Mashups**—Mashups are websites that draw information from different websites and merge it together. The utility of such sites allows users to gather large amounts of information about a particular question—all from one site. Google maps are an example of a mashup, where map information is combined with demographic information to provide a user a better perspective of a particular location.

**Real Simple Syndication (RSS) Feeds**—An RSS Feed is a Web based application that notifies users when a particular event such as a Home page has been updated. This precludes the user from repeatedly having to access the same website and navigate the same material.

**Social Networking**—Social Networking consists of websites where groups of people connect with one another and communicate on a variety of subjects such as work, common expertise, school, or family. Examples of social networking sites are Facebook, MySpace, and LinkedIn.

**Wiki**—Wiki is a website where users are authorized to edit and change posted information.

Some Wikis require registration to protect and ensure the integrity of the information. Wikis are an excellent tool for collaborating as authors of information.

## **CHAPTER 2 LITERATURE REVIEW**

### **Introduction**

A body of evidence can be found that suggests technology does little to change behavior within an organization. Alternatively, empirical evidence can be found to suggest technology does alter behavior and affect the overall structure of organizations. In this chapter, this researcher will make the argument to support both sides of this debate.

The opening section of this review will show how the Army is using the Web 2.0 technology in an experimental basis to see if it can replace a process that has been in place since its establishment. If successful, this change can alter the Army's hierarchical structure, the culture, and thus change behaviors well into the foreseeable future.

The next section will then provide a framework to discuss how the loss of power can affect a person's behavior. Within this context, a basis will be provided to show how the loss of power at the leadership level can affect the organization and some of the behavior leaders alter to protect the power they already own. This is an important section of the paper, as it lays down a foundation for the pros and cons of the technology insertion debate.

To illustrate how technology can affect behaviors, an empirical case involving General Motors (GM) divisions is offered. In this case, technology is inserted into an organization in the hopes of improving the planning process. However, in a post review of the implementation, many other changes occurred within the organization as well. These changes will then be linked to the loss-of-power discussion to make the argument technology does alter behavior.

To provide balance, the next two sections will propose that technology does not alter behavior. Instead, technology is adapted to support the current culture. Organizational values are what drive behavior, and these are not changed easily. To reinforce this argument, an example



will illustrate how security professionals work hard at keeping the status quo—and for good reason. However, their actions, unbeknownst to others inside the organization, work to preserve current behaviors.

### **Army Embraces Wikis**

With Web 2.0 technology, people have the capacity to transmit information freely over the Internet through blogs and Wikis. Through frequent updating, the contents on these sites become richer and more meaningful. In July 2009, the U.S. Army leadership encouraged its personnel to provide input and comment on the Army Field Manual. The idea behind this initiative is to gain insight from the collective experience of battle-tested soldiers and combining this information with the products traditionally provided by the Army's research centers and colleges. This represents a major organizational cultural shift for the Army.

The military is very bureaucratic with a clear chain of command, a strong hierarchical structure, and a tightly managed decision-making process (Adams, 2000). For many years, lessons learned in combat were sent to the Center for Army Lessons Learned. At this center, the information was reviewed and consolidated by the staff, reviewed by the Army chain of command, and then sent out in quarterly bulletins to soldiers (Bates, 2005). Today's urban wars changed this process, forcing the Army leadership to consider changing the current process. Leaders quickly recognized the importance of the chain of command—communicating information up the ladder to key management—but failed to communicate information down through the ranks to their soldier subordinates. This gap in communication was leaving soldiers frustrated and looking for alternate solutions. Soldiers began creating their own private sites where other Army members could provide information on a variety of topics. These could be as simple as how to get help for a pregnant wife to the security requirements to access a given facility or building.

Military organizations, with their top-down chain of command, are some of the least likely to evolve into information-flattening organizations (Bates, 2005). The Army has exercised a very specific “need-to-know” policy for nearly 200 years in writing Army doctrine. Now the policy is changing, and those in control of this information have become quite concerned. A process that has a 200-year legacy is being challenged.

The previous example demonstrates how the use of Web 2.0 can affect a long-standing process and tradition. In a survey conducted by Dynamic Markets (2009), 400 IT managers were interviewed on a variety of topics related to Web 2.0 technology. Approximately 30 percent of these managers served as Chief Information Officers and oversaw organizations that had, as a minimum, 250 users, which was set as the low-end threshold. In these organizations, 86 percent of all IT managers were feeling pressured to provide access to Web services. One in 10 senior executives already required these services, and 30 percent of all IT professionals are demanding this technology be made available. Interestingly, the staff within these organizations had a much greater desire to use this technology for personal use than they did for business-related work. This may help to explain why many companies are holding the line in offering limited Web services. Companies are concerned how these tools will be used and what behaviors employees will develop as these technologies are made more available. The McKinsey Quarterly (2008) survey tends to support this very premise. If searching the Web is removed, only one in four employees uses the Web 2.0 tools. However, this same survey shows a much higher usage in companies where the use of Web 2.0 tools have been integrated into companies’ workflow process. In fact, the majority of these companies are quite satisfied with its implementation. The most astonishing fact in this survey is 92 percent of the respondents stated their organization has changed based on the implementation of these tools. Later in this review, the author presents an

in-depth view as to what these numbers mean and if they are a leading indicator of behavioral change.

### **Power and Behavior**

Studies have shown the amount of power a person holds determines how the holder reacts and interacts with others (Lindsfold & Arnoff, 1980). Sometimes this power is used for positive gains; at other times, it may be used in an abusive manner. Additionally, those who have power will use it to keep an organizational structure they desire in place (Pfeffer, 1981). Other studies have shown early adopters of technology increased their power significantly more than those who waited for the technology to mature. This would seem to suggest new technology can alter individual and organizational behavior. In fact, research shows people who feel empowered react more quickly, are more sure of themselves, and are less reserved (Galinsky, Gruenfeld, & Magee, 2003; Keltner, Gruenfeld, & Anderson, 2003).

Technology insertions, especially those that interconnect people, offer an opportunity to build relationships between individuals who desire information and those who have control of it. Every organization has personnel who manage a variety of resources such as money, customers, technological solutions, and material. In a hierarchical structure, the amalgamation of this information is normally controlled by a few key personnel. This gives these individuals the power or influence to control people and resources, and have a significant impact on decision making. Web 2.0 takes some of this power away from them. A manager who needs information can go directly to the source and retrieve information. Others can make information available to the masses preventing it from being kept by a select few. These two simple examples illustrate how easy it is to reduce a person's power by simply providing access to others. When this occurs, those who had the power then change their behavior to protect their status. This occurs

due to a strong desire to be in a dominant position of authority and have the ability to restrain and restrict others actions (de Charms, 1968).

Generally speaking, competent hard charging leaders have a great desire to control resources. They spend a great amount of time looking for ways to influence others, are not afraid to exert their will to get their way, and pay attention to their social and organizational standing (McClelland & Boyatzis, 1982). If technology has the potential for an increase in power, it appears just as likely that the possibility leaders will seek ways to use it. On the other hand, if this capability is not understood, leaders may be more apt to try and stifle it. This seems to suggest a leader's view of technology will affect the behavior they demonstrate towards it and around those who try to use it. In a hierarchical structure, this change in the leadership thinking due to technology insertion could conceivably alter organizational structure and behavior as well.

### **Technology Changes and Organizational Behavior**

Thus far, much of this review has focused on the potential to alter an individual's behavior based on an insertion of technology such as Web 2.0. This next section will look at the effects of new technology on an organization and how it can possibly alter its structure, processes, and behaviors. This will then be compared to Web 2.0 surveys, which highlighted organizational effects caused by this technology.

Over the last 40 years, tremendous growth has taken place in the IT field. These advances have led to more and more people connecting, with the ability to communicate almost instantly to those who make decisions. One of the premises of this study is the ease at which communication occurs through Web 2.0 technologies, thereby creating the potential for changing the way people within an organization act and behave. However, an assertion could be made that these changes were occurring long before Web 2.0. In the 1980s, many companies began to experiment with the computer and how it might provide them a competitive advantage. General

Motors was one of those companies that implemented a management information system to support their environmental activities. Foster and Flynn (1984) assessed how this implementation affected personal and organizational behavior, task assignments, and hierarchical communications. These results have significance when evaluating the effect Web 2.0 may have on behavior.

In the early part of 1981, the environmental activities organization of GM invested in a business computing network system. This organization had approximately 180 employees—primarily white-collar employees with supporting administrative staffs. The primary objective behind this initiative was to better integrate the planning efforts of the staff. By late 1982, employees of this unit had electronic mail, access to electronic files, and quickly learned they could communicate to a much greater audience more quickly than ever before.

After the implementation of this information system, it did not take long for significant changes in relationships. In the first year alone, the way employees communicated, to whom they communicated, and how tasks were provided had all changed (Foster & Flynn, 1984). Members of the organizations realized they not only could they talk to their co-workers, but also to their peers. They could draw on information vertically and horizontally within the organization. Prior to the implementation, information flow went through vertical channels; a select few decided whether this information would be provided in any other direction. With the implementation of a system that provided an ease of information flow, employees recognized its value and altered their traditional behavior in favor of a much more effective way of accomplishing their work.

Another consequence of being connected was the morphing of the organizations' hierarchical structure from one of control or position power to a hierarchy of competency. The leadership sought out those who knew how to solve a problem or challenge, not those who had previously controlled the information. This was a major shift from current practices. Employees

simply did not communicate with senior leadership unless it was in the form of a scheduled meeting to discuss a topic or an event set up by those who managed protocol. Now the leadership was accessible, employees with like expertise were available, and electronic information was easily attainable. This created an opportunity for those who had competency and other leadership qualities to ascend up the management channel much quicker.

The third finding showed work assignments had been redistributed. Many of the more simplistic tasks were no longer being done by some of the more competent and talented employees. These tasks were relegated to others with lesser skills, freeing up the higher skilled employees to take on larger and more challenging actions. This improved the organizations' productivity and increased the amount of time the skilled workforce could spend on these higher level tasks. This change in task distribution even changed the traditional role of the secretary. No longer were they required to type up and prepare voluminous numbers of memos for signature. They now could provide such support as data entry and document editing.

Certainly, the work performed by Foster and Flynn does lend some credibility to the notion that the insertion of IT can alter employee and organizational behavior. A parallel can be drawn between Web 2.0 and the findings in the GM study as well, but on a much larger scale. In a McKinsey Quarterly (2007) survey of 2,847 executives, 75 percent of the respondents who had purchased Web 2.0 tools planned to use them to improve knowledge management, product design, and development. Fifty percent of the executives planned to use these tools to interface with their partners, and 70 percent required these tools to reach out to their customer base. Extrapolating from the GM situation, this should lead to a more competent global operation, less centralized control, and higher performing operations. As discussed earlier, each of these changes can potentially change the behavior and culture of the organization, leaders, and those who work within this new means of information flow.

## **Technology Reinforces Current Culture**

The GM results previously discussed showed, at least empirically, how the insertion of technology may change the way personnel act and alter processes that have been in place for many years. However, a body of published works clearly shows technology actually has little to do with organizational behavior and does more to reinforce the current culture. Proponents of Web 2.0 technology believe the more organizations are connected together, the more they will cause the flattening of organizations, promote the use of cross-functional teams, and inspire a culture of collaboration. The research performed by Kraemer and King paints a completely different picture (2005). In their review, technology is inserted into organizations to reinforce the current structure and culture. Furthermore, research performed by Fountain (2002) indicates this trend will continue since technology usually is overlaid on top of current structures. Factors such as the organizations' buying into the technology, interdependence between units, and leadership intent are not considered. These factors are important when attempting to transform and change behaviors in an organization, and when they are not considered, may actually cause employees to dig in, thus inhibiting change (Dubrin, 2010).

When technology is implemented in this fashion, the intent, at least on the surface, is to support the overall organization's interest. Yet, there usually are additional objectives managers have when applying these technologies. A prevailing belief is that these technologies will further enable their acquisition of information. This will then lead to more control of resources, provide a much greater chance to influence superiors, and will make the work performed far more visible to a leader (Kraemer & King, 2005). All the while, perhaps even the management team is unaware that these actions reinforce the current culture and behaviors.

Kotter (1996) explains in his book *Leading Change*, that managers and employees become a product of their environment. They are indoctrinated over the years and begin to make

decisions based upon the organizational cultural beliefs and values. These beliefs and values are hard to change, and it can take many years before any noticeable differences are apparent. These values become the drivers for organizational and personal behavior, and it takes sustained leadership with a strong vision to change them. The argument here is that leadership, management, and employees together can change behaviors if they agree to do so *together*. The process though is a difficult one, with many detractors who will try and derail any significant effort for change. According to Kotter (1996), if any of these groups do not embrace change, over time the old culture and behaviors will reemerge, and technology will adapt to support this culture, not alter it.

### **Need to Protect, Not to Share**

The beginning of this literature review opened up with an example of how the government is using Web 2.0 to support the writing of Army doctrine. This researcher could cite several other significant examples that show where the government is taking steps to insert this technology into everyday practice. In many of these examples, the government is attempting to share information in the hopes of meeting a major challenge more efficiently or effectively. Yet, many believe the information the government collects and distributes should be tightly controlled. Failure to do so can result in vulnerabilities within the government being identified and used against the country as a whole. A recent article posted online in the *FederalTimes.com* addresses the use of Facebook and the dangers associated with using such social network services (Rinckey, 2009). One of the key points in the article implies employees can lose their job and security clearance, depending upon the character of the friends with which they communicate online.

Security analysts do have a need to worry though, as hackers are looking for ways to exploit these social networks to gather information for identity theft. A common theme cited by



many security analysts is: If these networks can be hacked for the purpose of monetary gain, what prevents government networks from being hacked for political or other gain? Even IT managers are concerned with the proliferation of Web 2.0 tools. In a survey of IT decision makers who had implemented some Web 2.0 tools (Sanders, 2008), over half of them were concerned with the potential security risk associated with this technology. Their concern is strengthened by another survey where 35 percent (ISACA, 2007) of all employees admitted to violating current information assurance policies. These reports provide plenty of fodder for those who want to prevent the flow of information and help strengthen the current culture of need to know vice need to share.

## **Conclusions**

This review provides a balanced debate that technology may or may not change behaviors, and thus the structure and culture of an organization. An example was provided to show how this technology is being used by the Army today, and how it may affect a process that has been in place for close to 200 years. A GM empirical case was provided to show how technology does alter behavior and how power is linked to these changes. To counter these arguments, several other sources of research were offered. These sources supported the assertion that technology adapts to culture, not the other way around. The more this researcher dived into this debate, the more it became apparent that strong arguments can be made for either side of this technology-culture, culture-technology dilemma. This report certainly will add to this ongoing discussion.

## **CHAPTER 3 RESEARCH METHOD**

### **Introduction**

The purpose of this study is to gain a broader insight of the interworking of organizational behavior, and how Web 2.0 technology may affect the culture and behavior within these formal groups. To support this objective, a qualitative study design was chosen as a method for research. Insertion of IT into organizations shifts the focus from technological issues to managerial and organizational processes and behaviors. The prevailing belief is that the knowledge gained from using a qualitative method will enhance the understanding of how Web 2.0 technology tools are being used, reveal some of the motives for using these tools, and enable the development of guidelines that can be used to assess an organization prior to the implementation of such technology.

### **Research Design**

The design selected for this research is cross-sectional, as this study measures the attitudes and actions of two specific groups. One of the groups delivers IT services to its customers, as well as consumes these services. The other group is a consumer of these services to meet some of their mission objectives, but the services are used less than most groups due to the nature of their work. The cross-sectional design allows for the measurement of attitudes and beliefs at a specific point in time, with varying ages, missions, and experiences. Understanding how these groups view Web 2.0 technology may shed some light on how groups with similar makeups may be reacting to implementation of these technologies in their organizations. The information garnered by this approach provides organizational leaders and IT managers an additional data point when determining what technologies, if any, will work best within their environments.

## **Research Question**

The debate whether technology can change an organization's culture and structure has been ongoing for nearly 50 years. Arguments on both sides of this debate abound, with a substantial amount of literature to support each side. This researcher is interested in knowing if the new set of Web technologies, commonly called Web 2.0, is affecting behaviors within the Army's hierarchical structures. Additionally, do these tools place increased pressure on those who would like to prevent the free flow of information? Will the government culture evolve from one of need to know to one of need to share and influence?

## **Research Hypothesis**

The U.S. Government in general is slow to adopt technology changes, primarily due to security and cultural concerns. Web 2.0 technologies have the potential to change this thinking as leaders discover how these tools can be used. These changes will take time to implement; however, these technologies are already affecting personal and work behavior that will lead to a culture of need to share over a need to know. The results of this study will show the attitudes are already changing within the lower levels of government organizations, and at these levels a subtle pressure is emerging for organizations to adapt to a need-to-share mentality.

## **Participants**

The participants in this study will involve two organizations with distinct and specific missions. One of the groups will be a engineer battalion in the U.S. Army. Their personnel have varied education levels and are made up of officers up to the lieutenant colonel level and enlisted personnel. Some of the personnel within this battalion may share computer resources or have access to computers only at their homes. The second group's mission is in support of IT development and operations. This group consists of a highly skilled and educated workforce. Every employee has at least one computer system, and many may have several different

computers for different missions. This survey will be offered to over 500 employees, and it will be on a volunteer basis.

### **Research Instrument**

It is important to understand the feelings and attitudes of those who use Web 2.0 tools or desire to do so in the conduct of their daily work. The Likert Scale (n.d.) is a proven tool for such purposes. The respondents of this survey will be asked to provide a rating, which will closely match their beliefs about certain statements. One end of the scale will be *strongly disagree*, and the other end will be *strongly agree*. Some background questions will be asked to determine if the employees are in management, team leaders, and if they have access to the Internet at work. At the end of the survey, an opportunity will be provided to comment and provide any additional information on how these tools could potentially be used in support of their mission.

### **Data Collection**

These surveys will be posted online unless one of the respondents does not have access to a computer. One of the existing Web 2.0 technologies will be used as the mechanism of delivery. Those respondents who do not have access to an online computer will be offered a paper version of the survey. The data collected will be stored on a local portal, and all responses will be anonymous. The number of surveys offered will be in the range of 500, and the database will reject any attempts by a user to provide more than one input. The survey form will be developed locally, and no outside survey source will be used.

## **Setting and Environment**

This study will be conducted at this researcher's place of work. One of the organizations identified for participation in the survey has the responsibility to provide IT services to a wide range of professionals who support the Department of Defense. It is an ideal organization from which to solicit survey respondents as it has undergone several transformational efforts over the last 5 years, and can provide a rich environment as to the attitudes towards implementing new technology into organizations. The other organization has a very important mission in support of Army deployments, and has a wide array of hardworking soldiers of all ages and specialties. Due to an accommodating colonel, accessing this unit will occur during their formation exercises, and a high rate of return from survey respondents is expected.

## **Validity**

To gain a sense of validity for this research, certain members of the IT community will be chosen to provide feedback as to how well they interpreted the survey, whether the appropriate questions were asked to meet the outlined objectives, followed by an overall discussion with the researcher. Johnson (1997) outlines several strategies to perform validity in qualitative research. The method chosen was selected due to this researcher's access to many of the participants and the ability of the respondents to provide candid and reasonable feedback.

## **Reliability**

Web surveys are relatively new to most organizations, making it difficult to determine a reliability number. However, research is available comparing Web surveys to other standard means of survey, such as telephone interviews or face-to-face discussions. In a study performed by Braunsberger, Wybenga, & Gates (2005), respondents tended to be more open and honest to Web surveys than other means of interview. The survey provided the respondents a sense of anonymity, allowing them to answer the questions more reliably. Based on these results, this

researcher believes the Web survey method is a highly reliable method, and results would be repeatable due to the privacy associated with taking such a survey.

### **Summary**

The use of surveys to assess the attitude and behaviors of those utilizing and supplying Web 2.0 technologies was discussed in this chapter. As noted, a qualitative design is better suited to measure managerial and organizational issues. Throughout this chapter, a review of where this survey will be performed, how it will be administered, and the education as well as the responsibility of the respondents were discussed. A method of validity was put forth, and an argument to the reliability of this study was offered for review. Performing qualitative research on organizational issues is difficult, especially when new technology is inserted into the equation. The survey means of collecting data provides the best opportunity to analyze and gauge these results, which is the subject of the next chapter.

## **CHAPTER 4 RESULTS**

### **Introduction**

Of the participants contacted, 200 of 205 soldiers (98 percent) and 89 of 190 civilians (47 percent) completed the survey. The average age of a battalion soldier respondent was 27 years old, the youngest was 18, and the oldest was 46. The average age of the civilian organization respondent was 20 years older at age 47, while the youngest was 19 and the oldest was 69. For military positions, 30 percent of all respondents have some management responsibility and are composed of E-6 through E-8 noncommissioned officers/soldiers and O-1 through O-5 officers. Ninety five percent of all civilian respondents had no management responsibility; however, 30 percent were responsible for project management and team leader activities. The survey revealed 100 percent of civilian respondents had access to the computer and Internet resources at work, and 83 percent of all battalion soldiers did as well. Thirty days were required to conduct the survey. All soldier surveys were submitted in paper form during formation exercises. The battalion commander recommended this method as it ensured a high number of respondents and quick turnaround on collection of the data. The civilian survey was completed online, and over 95 percent of all respondents completed it within the first 3 days.

The data have been broken down into four areas along the main topics for the survey. An analysis was performed on the battalion and civilian organizations individually, as a group, and compared against one another. In some cases, a linkage was illustrated between the personal use of Web technologies and activities where these tools are used to support the various work tasks. The survey and results can be found in Appendices A through C.

## **Personal Use of Web 2.0 Technologies**

This first set of survey questions provides an overview of how much the Internet is used in a private setting to accomplish buying, gaming, information sharing, and video activities. The survey revealed that few soldiers and civilians use Web 2.0 to read or contribute to personal or public blogs. Interactive features such as video and video sharing sites were far more popular for soldiers. Over 57 percent of soldiers reported using this feature sometimes, with almost half of them taking advantage of this capability often. In contrast, only 27 percent of civilians use this feature for personal use, with less than a third of them using it often. The one area where there was some commonality between the soldiers and civilians was the purchase of items online. Although the numbers were slightly higher for the soldiers, both groups reported numbers of close to 50 percent or higher when asked if this tool had been used at least sometimes. Instant messaging is not popular among the civilian respondents, as a whopping 85 percent rarely if at all use this feature. Their military counterparts, however, do use this technology, with nearly 50 percent using this Web tool as a means of communication. Surprisingly, Internet gaming tools are rarely used by civilians, with 80 percent responding that they have never played an online game.

Overall, soldiers in this survey use the Internet and Web 2.0 tools more often for their purchasing and entertainment activities. The civilians seemed to like the convenience of online purchasing, but none of the other data suggests a desire to use these tools. The biggest revelation was how little Web 2.0 features required for structured reading and writing were utilized by either organization. Conversely, the use of video among soldiers appears to be a big hit, which may require additional study.



## **Using Web 2.0 to Improve Work Effectiveness**

Today's workforce, whether civilian or military, faces a constant onslaught of e-mail, voicemail, and text messages during work and personal time. Such a demand for people's time certainly can create challenges for the modern workforce. Yet, just 10 percent of both civilian and military workers in this survey say that the Web 2.0 technologies have made it harder for them to focus at work. In fact, 85 percent of all respondents believe these technologies have improved their ability to perform their work. Over 65 percent of both these groups responded favorably to the use of these technologies to communicate with their co-workers, share ideas, and expand the number of people they communicate with on a daily basis. Often inaccurate communication or misinterpretation of information can lead to higher stress levels and conflicts. In this survey, only 20 percent of civilians and a lesser number of soldiers expressed that stress levels had increased. This number tracks almost identically with the number of respondents who report that these technologies have caused them to work more hours. A closer look at the data reveals these respondents are in positions of management or responsible for people.

While this technology does expand the number of people and the frequency with which others can communicate, only 17 percent of civilians and 23 percent of soldiers responded that this technology helped them avoid the burden of bureaucracy. Working more hours and having a flexible schedule are still important to meet these demands. Almost 40 percent of the soldiers reported that this technology did enable this flexibility, but it came with a trade-off as they were required to work more and on weekends. The civilians, on the other hand, considered this technology to have a lesser effect on flexibility. Only 25 percent of respondents reported that Web 2.0 enabled flexibility, and a similar number believed this caused work efforts to spill over into their weekends. Overall, most civilians and soldiers responded that Web 2.0 has great

potential for creating a better work environment, but it does very little to minimize the bureaucratic nature of government operations.

### **The Emergence of the BlackBerry®**

Americans today are more and more tethered to some kind of electronic device to facilitate and improve work effectiveness. This too can be said for the two organizations surveyed in this study. To delve into this topic a little further, a subset analysis was performed on the previous topic of work effectiveness. This analysis showed over 90 percent of these users believed the BlackBerry® smartphone allowed them to communicate better and share ideas with co-workers. A key finding was 63 percent of soldiers and almost 50 percent of civilians found these devices enabled flexibility in the work they do. (This will show up later in more detail when the BlackBerry®-specific questions are analyzed.) The numbers for use on weekends (53 percent battalion/47 percent civilian), demands (35percent/30 percent), and even cutting through red tape (50 percent/27 percent) are significantly higher in positive responses. The one number that remained virtually unchanged from the broader group was the ability to focus at work (17 percent/12 percent). This seemed a little surprising due to the amount of time these devices are used.

In recent years, workers have become more likely to check their e-mail outside of normal working hours. This study reflects this trend. Over 82 percent of all respondents reported the use of their BlackBerry® for weekend work. This number drops somewhat during vacation periods, but not too much as 72 percent of civilians and 80 percent of soldiers use their BlackBerry® to complete work activities. Even when people are sick, the BlackBerry® is being used to complete work activities. Civilians and soldiers both report their illnesses do not keep them from using these devices. Nearly 83 percent of all respondents have used them while being laid up. The soldiers use them more while commuting (70 percent) when compared to their civilian

counterparts (53 percent), yet both groups have high usage prior to and right after work (86 percent battalion and 83 percent civilians). The data certainly show the high degree of dependence placed on these devices by those who use them.

### **Capability Needs**

The intent of this last set of questions was to determine what Web 2.0 tools are most desired and how the respondents felt about using them in a work environment. The answers to these questions differentiated the two groups somewhat, and the results reflect how many of these tools are used in each group's personal lives. Soldier respondents (44 percent) believe instant messaging has the ability to improve work performance if it is allowed while civilians (21 percent) believe such a tool has utility. The numbers on Blogs and Wikis stayed about the same as neither party is overly enthusiastic about using them. The civilians disliked them the most as only 7 percent of all civilians felt this would improve work performance. An area of significant agreement was on the use of virtual capabilities. Virtual capabilities include the use of virtual classrooms, video teleconferencing, and collaboration systems. Over 35 percent of civilians and 45 percent of soldiers in these two groups consider this a needed technology and would like to see more of it. Podcasts, which are closely related to virtual capabilities, did not do as well. The numbers are roughly half of those for virtual capabilities (25 percent battalion/16 percent civilians). Social networking still has a way to go before civilians consider it a viable tool, as only 13 percent of civilians believe this capability would improve work effectiveness while 33 percent of soldiers would encourage its use. Lastly, 34 percent of soldiers and 27 percent of civilians believe Web video can enhance work performance.

### **Summary**

While e-mail is still one of the most important means of workplace communication, the entire set of Web 2.0 technologies are becoming more and more important in both the work and

home environments. Online shopping appears to be one of the more popular activities used by all in this study. Age does not seem to be a factor, as there is at least a 20-year age gap between the soldiers and civilians, yet both groups use this tool about the same. At the other end of the spectrum, activities such as blogging and contributing to wikis has not gained popularity, and is the least used of all these tools.

Outside of those who are routinely using the Internet or e-mail at their workplace, an even larger group of workers is emerging, armed with the technological tools that can keep them connected to their jobs outside of normal working hours. Users of the BlackBerry® are constantly using it to stay connected, and are prone to using this smartphone anywhere and at anytime. While only one in five employees reported that these technologies added stress in their lives, this still is a significant number that needs closer examination as these technologies continue to proliferate. The results clearly show there are trade-offs between work flexibility, convenience, and demand for personal time. On the one hand, respondents cite the benefits of increased connectivity and flexibility that the Internet and all of their various technological devices afford them at work. Increased communication, sharing of ideas, and improvements in the ability to do their jobs are all cited as important aspects of these technologies by respondents. However, many workers still have trouble cutting through all the red tape organizations create, and the tools seem to have little effect on these processes. Yet, some respondents—primarily soldiers—would like to see a greater use of some of these tools. The soldiers would like greater latitude in using instant messaging and virtual capabilities, reflecting an increased acceptance and understanding of what these tools can provide.

The last chapter will explore some of the reasons why these soldiers are so much more eager to use these tools, with recommendations for follow-on studies and identification of some of the strengths and weaknesses of this report. The data provided in this survey are rich with age

diversity, mobility issues, and skill differences—many of which were not explored in these results. Overall, further research will be required to truly assess how these technologies will affect behaviors and processes in the future. The results presented here are just the tip of the iceberg.

## **CHAPTER 5 RECOMMENDATIONS AND CONCLUSIONS**

### **Discussion**

The term organization culture refers to a system of shared meanings, including the language used, the dress, pattern of behavior, value system, feeling, attitudes, interactions, and group norms. The results from this study do provide some insight into three of these components. The questions were specifically designed to get a sense of what respondents thought about these tools, how they were expected to use them, and whether they were viewed in a positive or negative manner. The data collected reflects a changing attitudes towards how work is done and when. These new attitudes are driving group norms and affecting behavior. Some employees are working longer, and almost all of them are using these tools to communicate and share ideas.

The battalion soldiers are more progressive when accepting the use of these tools and what they can do for them. Young soldiers tend to be away from where they grew up, don't have a great amount of money, and look for ways to connect in an inexpensive manner. This drives them to look for easily accessible solutions. In fact, a Pew Research Center study (Wells, 2008) found most early adopters of Internet use, as well of those who were the first to try Web 2.0 tools, did so because they could communicate inexpensively. The data in this survey certainly back up this claim, as almost all respondents believe this capability helps them communicate.

This personal desire to use these tools has spilled over into their work environment. Soldiers have learned the power of these tools and what they can provide. Their personal use of them has removed many of the concerns they have with them. In a sense, these early adopters had a chance to experiment and become comfortable with how these tools operate and what they could do. Now, this understanding and comfort level has seeped over into the work environment, driving the desire of many of these soldiers to use them at work. The data from this survey

highlights this desire, and it will increase the pressure placed on leaders within such organizations to allow Web 2.0 use as a standard means of communication.

This assertion is bolstered by the results of the civilian survey. They too use Web 2.0 tools to communicate, although they are not as dependent upon them. Overwhelmingly, the civilians in this survey believed these tools have improved communication and the ability to collaborate. Yet, many of the other tools were not viewed by civilians as favorably as the battalion soldiers. The civilians in this study do not require all these tools to keep in touch with their loved ones. Unlike soldiers, who rely on these tools to download photos or connect with their families, civilians are not typically geographically separated from their families for long periods of time. Hence, the incentive to use some of these tools is lessened, therefore lessening the importance of introducing them into the work environment. And since civilians have not grown comfortable with them, they have less of an incentive to use them. Yet, even with this lack of incentive, civilians still want to use some of the basic tools to communicate more and collaborate. Web 2.0 is advancing incrementally, and its integration into the working environments of both groups—soldiers and civilians—is inevitable. Ultimately, it holds out promise of changing the way we share and use information—and making it easier to do so.

### **Strengths and Limitations of This Study**

Two major considerations impact the strength and limitations of this study. The organizational sample was significant, with a high percentage of respondents. Over 90 percent of the military organization responded and nearly 50 percent of the civilian organization did as well. These are significant values and provide a wealth of data to analyze—almost too much data. One of the weaknesses of the study is a more in-depth analysis of behavior habits could have been done on each organization prior to assessing the effect of this technology. Questions could have been designed to get a baseline behavior analysis prior to delving into the different

activities. Such a design would have created a history to compare current and past states, and would have allowed for trend data to be developed.

Although trend data were not available for use in this study, the diversity of age strengthened the validity of this study. Survey questions compared and contrasted the behaviors, thoughts, and views of a group whose age spanned nearly 50 years. The results showed similar responses to the survey questions in areas where each group considered the technology an integral part of their modern business and work activities. Obviously, ensuring this study is reflective of a greater population is not possible. However, by using a military organization and a civilian one with a generation separation of age does provide an opportunity to see if these technologies are having a similar effect on each of them. Web 2.0 use will likely grow as more and more of the population is exposed to its power. Understanding how each generation is affected by this technology, independent of organizational structure, provides a glimpse of what the greater populace may be considering as these tools are implemented in their everyday life.

### **Future Perspectives for Practice and Research**

Few studies move beyond basic surveys to understand the motivations and purposes for which employees within the government use Web 2.0 tools. The work in this report begins this journey, but much more work needs to be done. Given the bureaucratic nature of government operations, both in the military and civilian ranks, the operational environment for these two groups to leverage the true power of Web 2.0 tools will require rewriting many policies and processes. Leaders will have to become more trusting of the decisions and actions of their subordinates. They will have to share power and information, and do so with caution to protect information affecting national security. Employees will need to have the skills to use these tools properly. This may involve training, embedding these capabilities into operations, or simply experimenting with their use on a volunteer basis.



To this end, future research needs to identify some the traits and characteristics leaders need to have to envision these technologies in this manner. Do they need to be less risk-averse or adopt a participative management style? What is the best way to train people on these capabilities? Are there generational issues that require highlighting and resolution? From this study, the implications are that these tools spill over into the workplace once they are routinely used at home. This researcher, however, did not find any other information to back up such a claim—but there may be something to this thought. It certainly is worthy of investigation.

In the literature review, this author highlighted the debate of whether technology drove changes in behavior, or technology enforced certain standards and norms. While this is an interesting debate, this researcher believes too much effort is being placed into such studies. More pertinent studies should focus on the value people place on communication and collaboration. The power of technology or current behaviors does not create a desire to try a new technology—it is the users who create the value by leveraging these Web 2.0 tools to enhance and manage their time, mode of communication, and self efficacy. The soldiers for this study are comfortable using many of these tools. They value the time they can spend with others and are motivated to find the easiest way possible to communicate with them. This researcher recognizes the data in this study represent a small subset of the population, and further study is necessary to back up this assertion. However, such insights may change the way we implement new technologies for communication and collaboration within the government. Ultimately, Web 2.0 tools may actually provide a means for sharing key data while protecting our most valuable information.

## **Conclusions**

Clearly, Web 2.0 tools are gaining in popularity just as the networked computer did almost 30 years ago. The more people used computers, the less intimidating they became.

Computers are a part of our everyday life, both at home and work. Web 2.0 tools are on the same glide path. As employees discover the power of these tools and begin to use them more frequently, the less complex and threatening they will seem.

This study set out to at least build on the body of knowledge on how Web 2.0 technology was affecting behavior and if it could cause a shift in culture. As this researcher started working through this question, it was quickly determined that many components have an effect on culture. Culture is not something that changes overnight. It can take years to change. Many might say the computer changed our culture forever, and the new Web 2.0 tools will do the same. This research does not support this argument.

While it may be true these tools do facilitate communication and collaboration, history reveals that the computer did as well. The computer, Internet, or even these tools have had very little to do with changing the underlying core of our culture. People have always had a need to communicate and work together. What the Web 2.0 tools have done, similar to their predecessor technologies, is to provide a new means of communication that facilitates our ability to be in contact with others. It is this contact that will change culture, not the tools themselves.

This study created more questions than it answered for this researcher. The original question of whether the government will evolve from need to know or need to share remains unanswered. This same question was asked back in the 1980s when computers were becoming more popular. Perhaps this was the wrong question to ask. A more important question may have been: Can people use these tools to make their jobs easier and to collaborate with others. If so, what changes have to be made in an organization? What will drive people to want to use the technology? How long will it take? Part of these answers is inadvertently embedded in this study.

To this researcher, clearly, and now more than ever, employees are most comfortable using technologies with which they grew up or those that are at least configured similar to

devices they have in their homes. The use of the BlackBerry® provides a clear example of this assertion. For the last generation, many of the more mature employees grew up around cell phones. As time has elapsed, these phones have evolved into a multifunctional work device, or smartphone. None of the users in this survey appears to be intimidated by these capabilities. In fact the opposite is true.

The second point that came from the study is people must be motivated to use the tools. If no incentive exists to use them, then the new devices become merely one more toy for someone's amusement. Just as (McClelland, 1982) emphasized time and time again, the different stages of need at the individual, group, and organization level drive motivation. A technology may fill this need, and when that occurs people are more apt to use it.

Finally, leaders—both good and bad—will find a way to use these tools to gain an advantage over their adversaries and control those who work for them. Bureaucracies are put in place by managers and leaders, not technology. The behaviors, attitudes, and management style must be changed to cut down on bureaucracies. This is still a leadership and management issue, not one that is easily solved with technology.

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## APPENDIX A: WEB SURVEY

### BACKGROUND

1. What is your rank or grade? \_\_\_\_\_
2. What is your age in years? \_\_\_\_\_
3. Do you have access to a computer and to the Internet at work? \_\_\_\_\_

### I use the Internet to (circle the best response):

<b>Buy products online (books, music, etc.):</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>As Much As Possible</b>
<b>Watch videos (YouTube, etc.):</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>As Much As Possible</b>
<b>Send instant messages:</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>As Much As Possible</b>
<b>Read someone else's journal/blog:</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>As Much As Possible</b>
<b>Play online games:</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>As Much As Possible</b>
<b>Contribute writing, files, or other content to your employer's website:</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>As Much As Possible</b>
<b>Create or work on your own online journal/blog:</b>	<b>Never</b>	<b>Rarely</b>	<b>Sometimes</b>	<b>Often</b>	<b>As Much As Possible</b>

### The use of Web technologies such as Internet, e-mail, smartphones, and instant messages has (circle the best response):

<b>Improved my ability to do my job</b>	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral / No Opinion</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
<b>Expanded the number of people with which I communicate</b>	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral / No Opinion</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
<b>Improved my ability to share ideas with co-workers</b>	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral / No Opinion</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
<b>Allowed for flexibility in the hours I work</b>	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral / No Opinion</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
<b>Made it harder for me to forget about work at home and on the weekends</b>	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral / No Opinion</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>





<b>Virtual capabilities would improve my work performance</b>	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral / No Opinion</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
<b>Social networking systems would improve my work performance</b>	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral / No Opinion</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
<b>Podcasts would improve my work performance</b>	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral / No Opinion</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>
<b>Web video would improve my work performance</b>	<b>Strongly Disagree</b>	<b>Somewhat Disagree</b>	<b>Neutral / No Opinion</b>	<b>Somewhat Agree</b>	<b>Strongly Agree</b>

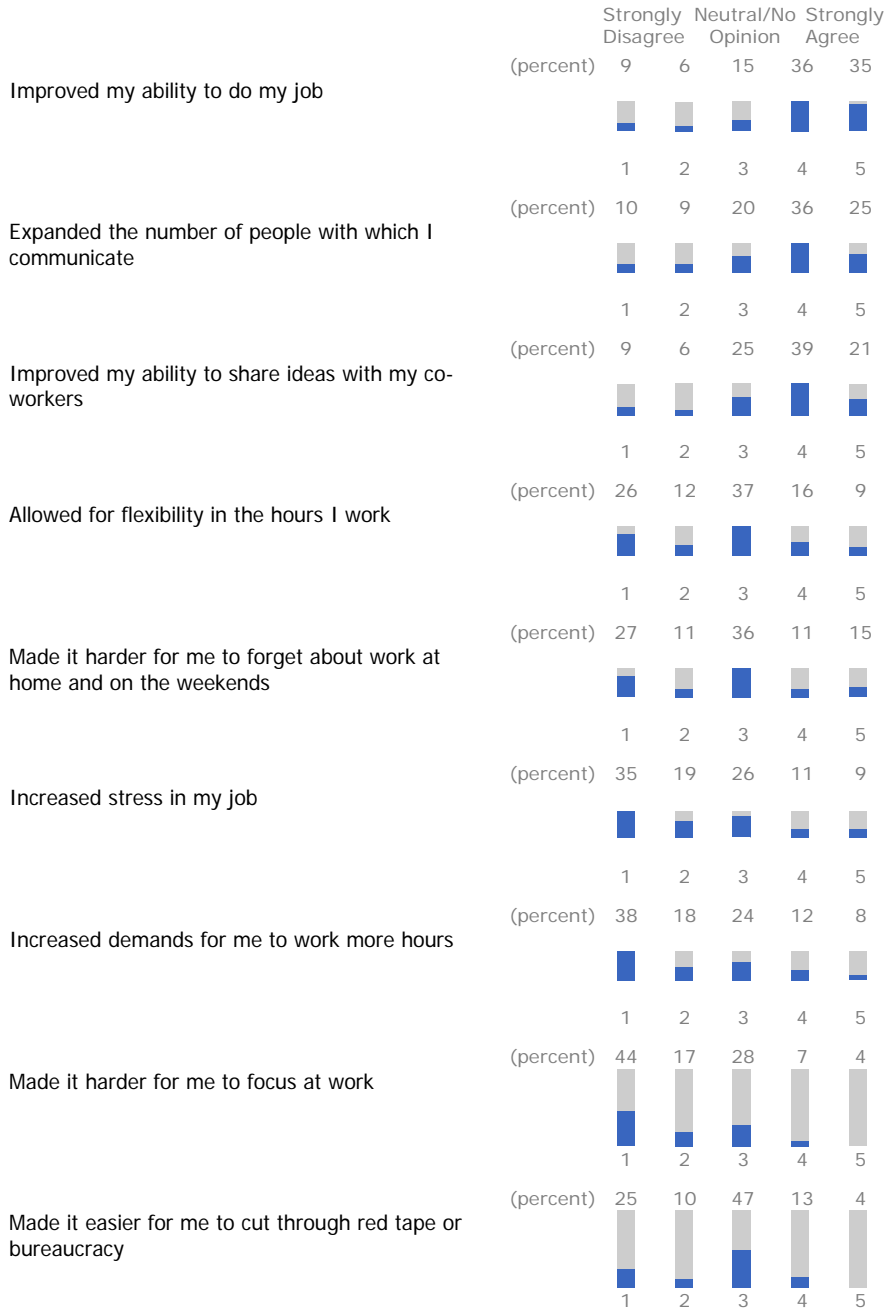
## APPENDIX B

### CIVILIAN SURVEY RESULTS

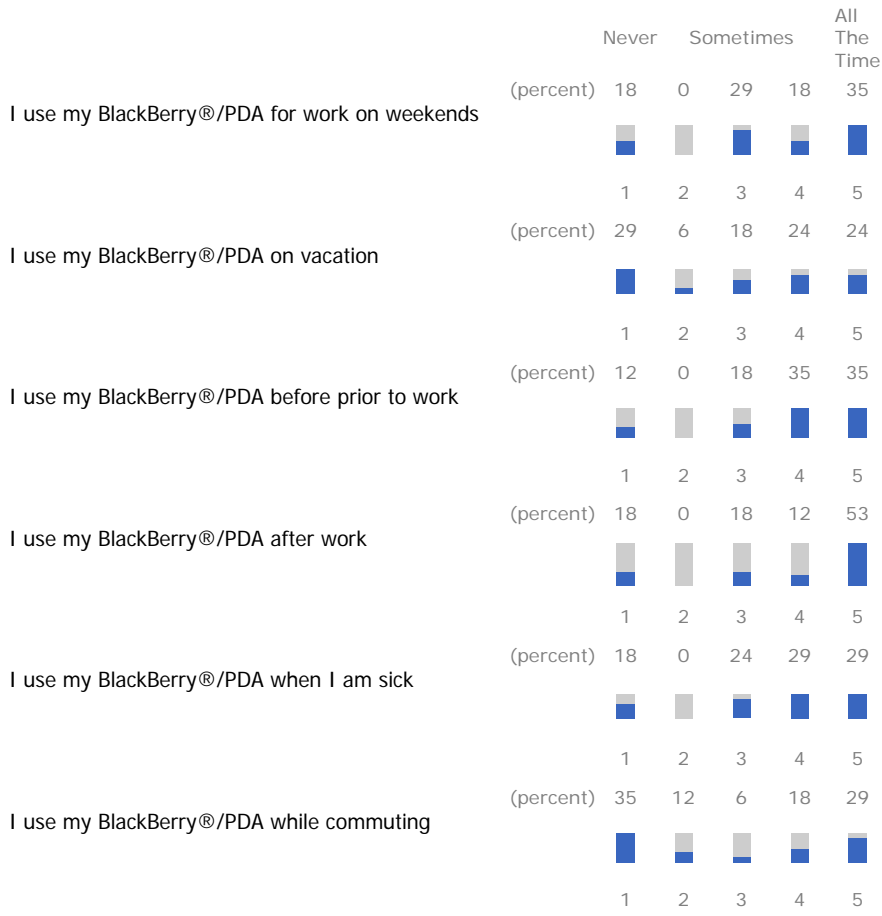
#### Personal use of Web technologies:



**The use of Web technologies such as Internet, e-mail, cell phones, and instant messaging has:**



## If you use a BlackBerry® or PDA for work purposes:



## If authorized for use:





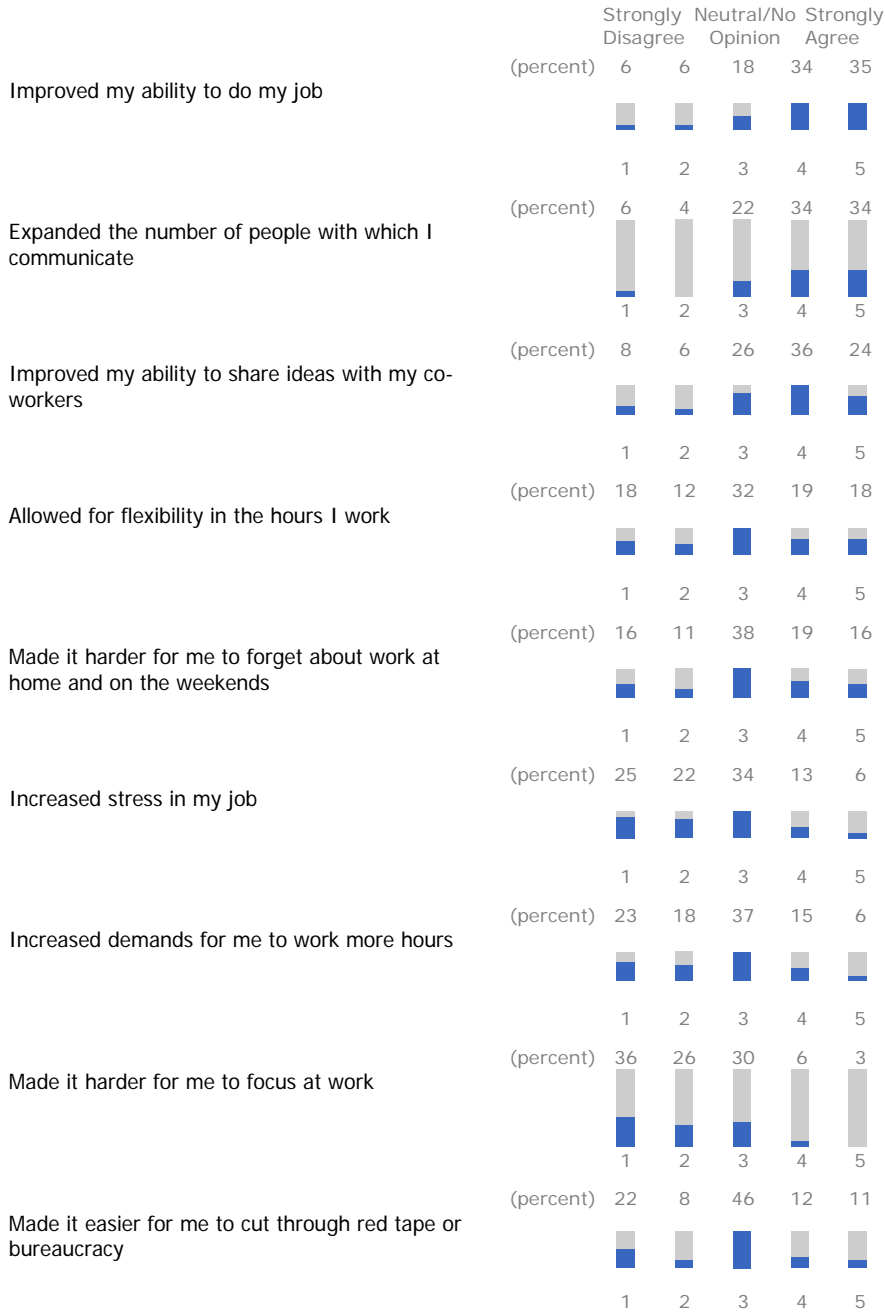
## APPENDIX C

### BATTALION SURVEY RESULTS

#### Personal use of Web technologies:



**The use of Web technologies such as Internet, e-mail, cell phones, and instant messaging has:**



## If you use a BlackBerry® or PDA for work purposes:



## If authorized for use:





