UNDERSTANDING THE IMPACT OF MANAGEMENT FACTORS ON TECHNOSTRESS IN ERP ADOPTION AND USE

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PROJECT

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UNDERSTANDING THE IMPACT OF MANAGEMENT FACTORS ON TECHNOSTRESS IN ERP ADOPTION AND USE

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Abstract

of

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ON TECHNOSTRESS IN ERP ADOPTION AND USE

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Statement of Problem

In the health care industry, enterprise resource planning system users can be affected by management influences. This influence can affect management factors such as work relationship, work overload, technical support, role ambiguity, and job security which in turn could affect technostress.

Sources of Data

A comprehensive literature review on technostress and enterprise resource planning will be performed. Personal interviews with experts in the healthcare field will be conducted.

Conclusions Reached

Based on the literature review and interviews, for users of an enterprise resource planning system in the healthcare industry, management influences the management factors of work relationships, work overload, technical support, role ambiguity, and job security.
security which affect technostress.

______________________________, Committee Chair
Dr. Beom-Jin Choi

____________________
Date
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Chapter 1
INTRODUCTION

Technology is a part of every one’s life from the use of computers to cellular phones. The use of technology has allowed individuals to become more productive and efficient both at work and home. But there is a cost to this potential increase of productivity in the form of technology stress. Technology stress or “technostress” is a relatively new phenomenon in our society and culture and has affected many individuals in business. Technostress can be defined as a personal stress that occurs because of a reliance on technology or the constant anxiety of being "connected" with technology and can cause individuals to be less effective and less productive at their job. This reduction of productivity in business translates into an organization becoming less productive.

Technology, more specifically, informational technology (IT) evolves so quickly that organizations that do not adapt cannot remain competitive against organizations that do. The application and implementation of new technologies can create stress with organization’s employees and can negatively affect productivity. The cost of IT can be expensive for an organization, but it is necessary in order to obtain the most current and accurate data available to make the best business decisions (Weil and Rosen, 1997; Fisher and Wesolkowski, 1999; Tarafdar et al., 2007).

Technology has played a key role in development of more efficient processing of data into useful information. Technology is constantly changing and business must adapt those technologies to improve its business processes, and incorporation and integration of these technologies can be a challenging endeavor. An organization must analyze its
processes and determine the best and most effective method of implementing new technologies. In today’s global market, businesses are constantly searching for competitive advantages over its competitors. Enterprise resource planning (ERP) system and customer relationship management systems (CRM) have been implemented to increase productivity and efficiency in businesses. An important aspect of these systems is network accessibility and communication that can be used in different business capacities such as marketing and selling of products or services as well as customer support and corporate operations. An ERP system manages information from shared data stores through the use of a local/wide area network. The access of data is integrated among the different areas of an organization. Implementation of an ERP system allows a business to interconnect all of its functional groups in order to effectively accomplish its tasks and goals. Although implementation of an ERP system can be extremely difficult, the benefits are well worth the effort. An important part of a successful ERP system is the organizational buy-in. The employees need to accept and use the system to its full potential. If employees do not embrace it, the ERP system will ultimately fail (Korunka et al., 1997; Barki and Pinsonneault, 2005; Kwahk and Ahn, 2010; Adbul-Gader and Kozar, 1995; Fisher and Wesolkowski, 1999).

With the new application of technology, new organizational issues can arise among its employees. Depending on an employee’s aptitude towards technology, the application of technology can create anxiety and tension. This introduction or increase of emotions can affect an employee’s organizational effectiveness. Because of these emotions, an employee may become apprehensive about using technology. The
application of new software or hardware can create resentment and can have an ill-effect on an employee’s productivity (Hudiburg and Necessary, 1996; Marcoulides, 1989).

The application of technology can cause stress in the workplace. The implementation of computer systems such as an ERP system allows an organization to become more efficient at its core business as well as more effective in its functional areas. Employees must become efficient at using these systems or become obsolete. This constant pressure can increase job stress. Constant learning of new system is essential in many companies. Many employees become overwhelmed, and this can create technostress that leads employees to become less productive and efficient in their job function.

Technology application can also affect organizational roles. When an organization implements new informational systems, it can create new organizational processes which in turn can create new roles or make current roles ambiguous for its employees. If employees cannot adapt to this change, it can create more anxiety and lead to addition stress (Barley, 1990; Zuboff, 1988). With the emergence of technostress, organizations need to learn how to reduce and manage it. Without this, employees become dissatisfied with their job and may leave (Scott and Timmerman, 2005; Brillhart et al., 2004).

The organizational environment can play a factor in a worker’s attitude and effectiveness. Management can play a crucial role in the organizational environment and culture of an organization. Management factors can affect the level of stress and anxiety of its workers. Areas that can be affected by management are job tasks, organizational
roles, career development, work relationships, and organizational structure and culture. Each of the areas can be related to job stress, in general, but there are a few that can be more relevant to technostress (Michie, 2002).

Organizations that have the capability to identify, manage, and control work-related stress such as technostress have an advantage over organizations that cannot accomplish this. Identifying factors that affect technostress allows organizations to align themselves and create a more efficient and effective work environment (Arnetz and Wiholm, 1997; Brillhart, 2004).

Previous studies have shown that technology stress affects productivity (Tarafdar et al., 2007). In Tarafdar et al. study, the authors mention the possibility of management influence, but do not address it in detail. Management factors need to be examined in order to determine the effects they have on the technology stress. Management plays a crucial role in the workplace and can dramatically affect an organization's workers.

Another area in the Tarafdar et al. study that was not addressed was organizational environment and culture. A more recent Wang et al. study (2008) addressed how different organizational environments have an effect on technostress. In this study, they showed how the extent of power centralization in an organization has a positive relationship with level of technostress. This means as the organization becomes more centralized in regards to decision-making, the higher level of technostress. Control is the underlying component of the centralized power. The Wang et al. study explains how management plays a role in reducing the level of technostress. As management is more centralized, the more it affects technostress. Management power can be equated to
organizational control which can lead to influential pressure on an organization’s culture and environment (Wang et al., 2008).

This study will involve a complete literature review analysis of technostress and enterprise resource planning. The main purpose of this study is to examine the impact of management, more specifically, management factors, on technostress in relations to the usage of an organization's ERP system. The study will demonstrate that technology-specific management factors such as work relationships, work overload, technical support, role ambiguity, and job security, affect the level of technostress and in turn alter an organization’s productivity. Personal interviews will be used to investigate management influence on technostress. Based upon the literature review and the personal interviews, propositions will be formed and subject areas for a possible survey will be addressed. The remainder of the study will be organized by the following sections: literature review, enterprise resource planning, research methodology, data analysis and results, propositions, discussion, and conclusion.

The literature review will explain the findings of previous studies about technostress and management components. This section will discuss the body of work that has been completed to date.

Enterprise resource planning section will discuss the use of ERP and how organizations integrate, implement, and evaluate ERP systems.

The research methodology section will explain how the data will be collected and the reasoning for the type of data being used.
The data analysis and result section will present the findings of the study. This section will show how the data was collected and analyzed.

The propositions section will present the proposed relationship between management factors and technostress. This section will incorporate the current knowledge as well as the expert interview's responses to support the proposed relationships.

The discussion section will show insights and in depth analysis of the results of the literature review and interviews. Limitations and future directions will be discussed.

The conclusion section will explain the overall findings of the study and a summary of the results.
Chapter 2

LITERATURE REVIEW

Technostress

Stress has been a major issue for organizations, and employers must deal with it in order to be productive at work. In the past decade, technology has grown tremendously, and many new job-related stresses have arisen. A portion of this job stress can be attributed to technology use. Stress induced by technology has been denoted as technostress and has become a major issue for organizations. Technostress can be defined as a personal stress that occurs because of a reliance on technology or the constant anxiety of being "connected" with technology (Brillhart, 2004; Tarafdar et al., 2007).

The use of technology can create tension and anxiety for workers. This anxiety manifests itself when individuals become overwhelmed about using technology. If they do not understand the technology, it can frighten them and can lead to work tension. The anxiety and tension can also come from the inability to use the technology that leads to a disadvantage over other workers who do use the technology effectively. The non-users become less competitive compared to their counterparts (Brillhart, 2004; Tarafdar et al., 2007).

Applications of new technologies in the workplace are implemented in order to create a competitive advantage and reduce operating cost. The use of the technology initiates re-engineering of business processes that were more manually-intensive and replace them with more automated processes. This creates a new framework within an
organization that removes the decision-making and power from the workers and places the authority into the hands of newly-automated processes which is usually controlled by management. Not only does the application of technology can alter an organization's function groups, but it can also alter the individual’s roles in an organization which in turn can create stress (Tarafdar et al., 2007).

In the 21st century, most jobs require some type of technological interaction whether it be in an office or in the field. Interaction with computer systems is inevitable and can create technostress that can lead to ineffectiveness in the workplace as well as health problems. These health problems lead to missed work, absents and loss in productivity. Organizations need to understand these issues and implement solutions (Arnetz and Wiholm, 1997; Thomee et al., 2004).

Technostress - Industries

Technostress has been observed in many different industries. The most common industry is the informational technology field. Within this field, technology is constantly being implemented, integrated, and used by its workers. Businesses are continually re-engineering their work processes in order to be more productive and efficient especially with the downturn of the economy. IT professionals in the informational technology field are not immune to technostress. These workers are both implementers as well as sufferers of the technology they create and are impacted similarly as other workers in other industries. These IT professional learn how to cope with the technostress by identifying the root cause of the stress and implementing coping strategies such as
learning the functionalities and increasing training on the technology to help mitigate the technostress (Scott and Timmerman, 2005).

With so much information on the Internet, it is inevitable that the information must be sorted and organized. Libraries have been dealing with this issue for years. Organizing and assimilating it would be an enormous task even with the use of technology. The University of California Berkeley embraced this issue by integrating newly-emerging technology into many of the staff's workloads. The organization created a work culture of technology integration. This allowed the employees time to assimilate and use the technology in all of their daily work tasks. This type of forward-thinking allowed the university to transform its library into one of the most advanced computer-based libraries in the nation. In the last fifteen years, many libraries have used the University of California Berkeley's methodology as a framework to transform the library industry. Card catalogs have been replaced with computers that can access and search for a user's request more efficiently. Individuals and library staff must filter through all the data in order to assimilate the vast amount of information. The monumental task of filtering the pertinent information from the peripheral information can create stress (Huwe, 2005).

Another related industry that has been affected by technostress is the educational field. In the past decade, teachers have become exhibiting technostress because of the application of technology in their schools. Teachers need to be computer-savvy in order to be productive and must be willing to embrace technology in order to teach their students. The use of Powerpoint presentations and interactive websites for student
instruction is normal in schools. Most students are computer literate and need the
technology to become engaged in learning. Because of the constant exposure to
technology, students become reliant on the different technologies in order to keep their
interest. Teachers who are not willing to accept this become obsolete which can increase
their technostress. Knowing that technology can have an adverse effect on the teachers,
schools have implemented processes to aid the teachers in reducing technostress. This
includes more technology training, practicing before using the technology, changing
teaching styles, and classroom management training (Al-Fudail and Mellor, 2008).

The healthcare industry also has shared in the increase in technostress. With the
increase of online journals and peer-reviewed research articles, health clinicians are
accessing this information over the Internet. Because of this, information overload can
occur which is a component of technostress. Although all this information can be useful,
there comes a point where the volume of information can become detrimental to the
users. Researchers have learned to use technology to filter and consolidate the most
important articles related to their field of interest. But even with the filtering, an
enormous amount of information is obtained, and users become anxious they cannot
assimilate all of it (Hall and Walton, 2004).

Technostress - Organizational Effects

Examining the body of knowledge for technostress for the past two decades
allows us to determine a comprehensive view of technostress. Based upon the literature
search, it is shown that technostress can effect an organization in many different ways.
The research articles can be organized into one of the three categories as shown in Figure 1.

![Figure 1 What Technostress Affects](image)

Most of the literature focuses on how technostress affects an organization's function or business. Many of the articles address information overload and large-volume data processing. In the case of the Huwe paper (2005) and the Ennis paper (2005), libraries are greatly affected on the amount of information that needs to be sorted and cataloged and creates organizational issues on how best to accomplish that. These organizations must constantly re-examine their processes in order to become more effective. The amount of data that libraries must assimilate is constantly increasing.

According to Murray and Rostis (2007), Sethi and Barrier (1999), and Moore (2000), workers can become overwhelmed and experience burn out because of technology. With the constant usage and technology interaction within an organization,
individuals can become inundated. This engulfing of technology can make users "tired" and "exhausted". The technological "burn-out" makes workers ineffective.

Coping with technostress can be challenging for an organization. Hogge (2006), Wood (2001), and Goldsborough (2002) examine how organizations deal with technostress. They suggest ways and methods on how these organizations can manage and mitigate technology in their organization to reduce technostress. Once organizations can identify and manage technostress, the more effective they can become. Organizational processes that manage technostress need to be implemented in order for organizations to become more efficient.

One last area on how technostress affects organizations is implementation or acceptance of technology. Based on the Popovich study (1994) and Abdul-Gader and Kozar study (1995), implementing and maintaining technology in an organization can be difficult if the level of technostress is too high. The organization's worker needs to accept the new technology in order for it to work.

Based on the literature, another major concern with technostress is health and psychological issues. According to the Thomee et al. (2007), technostress can cause depression and sleeping issues. This in turn can affect many other aspects of life such as work and family. Technostress can also affect work performance. According to the Arnetz and Wiholm study (2007), technostress can create psychosomatic issues for the workers which can lead to inefficiencies at work.

One area that is a main concern with organizations is productivity. With the use of technology, organizations are expecting an increase in productivity. But if
technostress also increased because of the technology, productivity could be adversely affected. According to the Koellinger (2006), Bartel et al. (2006), and Garicano and Heaton (2007), the use of technology can affect business processes as well as productivity. The TARAFDAR et al. study (2007) was one of the first paper to quantitatively suggest a relation between technostress and productivity. The relationship is a good foundation for organizations to understand and build upon.

Technostress - Effectors

As the above literature has stated, technostress can affect many different aspects of an organization. An organization needs to understand what factors affect technostress. Based on the literature, these factors can be organized in the following way (Figure 2).

![Figure 2 Factors That Affect Technostress](image)

Based on the TARAFDAR et al. (2007), Tu et al. (2005), and Brillhart study (2004), technology factors such as techno-overload, techno-invasion, techno-complexity, techno-
insecurity and techno-uncertainty can have affect on technostress. These six factors have been shown to have a strong relationship with technostress, but one area that was not addressed in the literature is the role of management influence.

As for personality factors, the Korukonda study (2005) suggests that user's personality traits can have an effect on the level of technostress that an individual experiences. If an individual has a strong computer basis and openness to be flexible, they are less likely to have a higher level technostress than an individual who has a weak computer basis. Once again, the idea of management was not addressed with the individual factors.

As for management factors, the Brillhart study (2004) and Michie study (2002) suggest that work overload may have affect on technostress as well as job stress. Other factors such as role ambiguity, technical support, job security, and work relationship can also have an effect on technostress (Clark and Kalin, 1996; Fisher and Wesolkowski, 1999; Wang et al., 2008; Strang, 2004). It is possible for these factors to be influenced by management, but this idea was not addressed in the literature. These factors were more associated with work-related stress and not technostress, specifically.

Organizational Environment and Culture

Management has the power to set the tone of the work environment in an organization. The work culture will determine the attitude of its workers as well as the working conditions of the organizations. A good working environment can promote productivity and efficiency. When managers demonstrate to its workers that they
understand their workers' attitudes and issues, there is a strong correlation between job satisfaction and work climate (Sellgren et al., 2008).

An organizational environment consists of different factors that affect its organizational operations and performance. This includes both internal and external environments. Some external factors include political and social factors. Internal environment includes internal factors that affect management and organizational goals.

Many studies have shown how internal organizational environments affect job stress. This includes completion stress, roles stress, and management stress. Completion stress occurs when employees become overwhelmed when attempting to complete a task. Scope creep and deadlines can place incredible amounts of stress on the workers. This stress can interfere with completion of the project.

Roles stress can also affect an organization’s workers. As projects are being planned and executed, the business processes and procedures can change. Whether these changes are major or minor, the workers’ roles could change. This can create stress to the group. Additional roles or no role definition for its workers can be frustrating and stressful. Defining a worker’s role is important to reduce stress. This allows the individuals to understand what is expected of him or her (Michie, 2002).

Job stress is present in any organization and plays roles in many different areas such as job performance to job completion. Management stress is an important tool that needs to be functional in an organization in order to succeed. Dealing with these types of job stress allows workers to manage their life in order not to “burn out”. This stress can lead to unproductive work and health problems. Some organizations take steps to assist
its workers in reducing this stress. Ways to reduce stress are physical exercise as well as
dedicated human resources to discuss their issues. Management can establish these
programs to increase its worker’s effectiveness and reduce their stress and anxiety.

Stress can be divided into three different categories. According to the Hendrix et
al. (1995) study, the three categories are:

- Organizational internal factors
- Organizational external factors
- Individual characteristics

Organizational internal factors have the most direct influencing factors to job
stress. In the Matterson and Ibancevich study (1979), they developed a Managerial
Oriented Stress Model and noted some organizational stressors such as organizational
atmosphere, management style, and organizational communication.

Organizational culture has a great effect on an organization’s operation (Barney,
1986; Denison and Mishra, 1995; Sheridan, 1992; Wilkins and Ouchi, 1983). The use of
culture allows managers the ability to apply leverage against its workers (Schwartz and
Davis, 1981). This leverage could be used to increase productivity. It has been shown
that the main factor that determines a group’s behavior is more associated with its
subjective consciousness and not an individual’s own objective view. Different
individuals are motivated to increase productivity. Some workers prefer financial
compensation, while others to affirmation of their work for validation. Management can
use this type of reward to increase its organization’s productivity. Ma and Bao (1999)
have shown that employees with negative perspective such as anxiety and depression
have lower performance than employees who have a positive perspective. This culture has a direct effect on productivity.

Management Factors

In many organizations, management plays an important role in the organizational environment. Without management, an organization’s work force does not understand an organization’s mission or goals. Management is used to focus its workers on tasks in order to make an organization profitable and productive. There are five major management factors that can affect the workers: work relationship, work overload, technical support, role ambiguity, and job security.

Work Relationship

The relationship between management and its worker is important in the effectiveness of an organization. A positive working relationship allows for good communication, while a negative one leads to resentment and disloyalty (Handy, 1993; Fiedler, 1996; Strang, 2004).

Work Overload

Implementation of an ERP system in an organization is supposed to increase the productivity of its workers. With this assumption, management can lose sight of the capabilities of its employees especially when the system is newly installed. Management can demand more work from its employees. This increase can create work overload and allow for more mistakes and can create stress to an organization’s work force. Because of the ERP system, new business processes must be developed and implemented. If
workers are not given enough time for this restructuring, stress can develop. The pushing of management does not help the situation (Brillhart, 2004; Michie, 2002).

Technical Support

A newly-implemented ERP system can be complicated and complex. Without the proper support, workers can become disenfranchised with the system and refuse to use it properly. This can cause more inefficiency. Management needs to implement the proper support systems for its workers. Providing proper training and technical support can be crucial in order for the employees to accept the new system. Without this support, the employees will be more reluctant to use it and can lead to frustration. This frustration allows for increase in job stress (Clark and Kalin, 1996; Fisher and Wesolkowski, 1999).

Role Ambiguity

New business processes must be implemented because of the new ERP system. Because of this, workers may find themselves in new business roles. It is management’s job to define these roles to its employees. If role definition is not clear, workers will become uneasy about their job and tasks. Because there is not role definition, business tasks could be duplicated by different business unit that leads to inefficiency and waste of resources. This defeats the purpose of an ERP system. Management needs clear and concise role definition to avoid these issues (Michie, 2002).

Job Security

An ERP system should increase an organization’s efficiency and effective. When this occurs, it is possible that certain business processes could be eliminated. If current
employees were performing these tasks, they might not be needed and can create job insecurity. This can decrease worker morale and create an unstable work environment (Wang et al., 2008).
Enterprise Resource Planning (ERP)

Many different industries are using ERP system to increase effectiveness and lower cost. That is why, some businesses implemented customer relations management (CRM) systems and enterprise resource planning (ERP) systems. These systems are used to reduce redundancies in an organization and centralize its data and information. ERP systems are used in many different industries to perform the day-to-day functions in order to increase efficiency. Not only has technology organization implemented ERP systems, but manufacturing and construction companies have (Alpern, 2004; Chung et al., 2009).

In today’s market, CRM and ERP systems are sold by many companies such as Oracle and IBM. It appears that CRM and ERP are similar system, but they have different functions. Typically, a CRM system is the outwards part of the business while the ERP is the backend part. A good analogy of this is an arrow. The tip part of the arrow is the CRM system. This is the area that has contact and connects with the consumer. The CRM system develops this relationship. The shaft and tail part of the arrow is the ERP system. This system is used to connect the other parts of the arrow together in order to allow the business to move in the right direction. The relationship between the CRM and ERP are essential in order for a business to be productive and profitable (Newlin, 2009; Smith, 2010).

After examining the literature about ERP and productivity, the articles can be organized into three specific areas as show by Figure 3.
ERP integration is how the new ERP system will be incorporate into the existing organization's processes. This usually entails the examination of the existing organizational processes and how the new ERP system will be used.

ERP implementation is the process of implementing the new ERP system to the organization. Not only does this include the actually implementation of the ERP system, but also the training of the users who will be interacting with the new ERP system.

ERP post-implementation involves the period after full implementation of the ERP system. This is when the system users begin to "field test" the system and uncover possible issues. This also includes the measurement of how useful or successful the new system is. Measuring of the ERP system is crucial into to determine if the implementation of the system was a good decision of the organization.
ERP Integration

ERP integration is an important for an organization to be successful. Having the ERP system full-integrated into an organization's processes is essential. Based upon the Chou and Chen study (2009) and the Dechow and Mouritsen study (2005), constant monitoring of the ERP system is required to determine if it is still integrating well with the organization's processes and goals. Understanding the organization's business processes allows for a smoother ERP integration. The Dickie study (2009) and Barki and Pinsonneault study (2005) also states that performance of the ERP system is important for successful integration.

ERP Implementation

ERP implementation is one of the most difficult task for any organization and is why most ERP systems fail. Based on the literature, many of the articles examine factors that make ERP implementation a success. Based on the Garcia-Sanchez and Perez-Bernal study (2007), there are critical success factor that organization should know in order to have a successful ERP implementation. The Beatty and Williams study (2006) also reinforces similar ideas of creating an organizational environment to succeed.

ERP Post-Implementation

ERP post-implementation is the time after the ERP system has been implemented. During this period the effectiveness of the ERP system needs to be determined. According to the literature, organizations focus the majority of their time to measure and
evaluate the ERP system. The Wei study (2008) and Skibniewski and Ghosh study (2009) focus on key performance factors.

Understanding the effects of ERP implementation is also important. According to the Newlin study (2009) and Nicolaou study (2004), the effects of ERP implementation can effect productivity and organizational performance.

Optimization of the newly-implemented ERP system is crucial in order to improve on an organization's effectiveness. Based on the Harris study (2004) and Roque study (2010), organizations are constantly optimizing its ERP system in order to increase efficiency and cost-savings. This can lead to improved ERP processes such as improvement on application and system support (Olsaker, 2010; Wognum et al., 2004).

ERP - Industries

Businesses are composed of different functional and operational groups and work in concert to make a business successful. Groups such as finance, management, and operation need coordination in order to run efficiently. Application of ERP system is implemented in many different industries. The most common industries are construction and government. A new industry that is implementing ERP system is healthcare. With the recent legislation to create electronic medical records, the use of technology in the healthcare industry is inevitable.

In recent years, the use of ERP systems has increased in the healthcare industry. The most common area that ERP system has been used is the transmission of healthcare records and data and with the passing of healthcare reform and new regulatory requirements, the increase of the data is inevitable. The ERP systems receive this data
with the use of Electronic Data Interchanges (EDI). The use of EDI can lower an organization’s operating cost and create a competitive advantage (Woodside, 2007).

Another area that ERP system has been used in the healthcare industry is in the automation of human-centric processes. The original ERP systems were designed based on Material Requirements Planning systems that determine actions based on production schedules, material utilization, and customer demands. The healthcare industry does not deal with a specific product. Ultimately, it deals with “real” people. The ERP systems need to have a more human-centric design in order to be sensitive to this. Integrating this human-centric view is important to the healthcare industry (Stapleton, 2006).

Another area of the healthcare industry that uses ERP systems are medical facilities such as hospitals. ERP systems are implemented to manage and coordinate a hospital’s resources from patient care to medical inventory. They are also used for scheduling medical procedures in order to efficiently and effectively use the medical staff. The use of the ERP system allows for more efficient use of a hospital’s precious resources without wasting time (van Merode et al, 2002).

ERP - Life Cycle

An organization’s ERP system is supposed to make business processes more efficient and help centralize an organization's data and information, but it can also create an enormous amount of stress. The four areas where this can occur are the implementation phase, integration phase, application phase, and post-implementation phase. During the implementation phase, the time schedule for implementation can create stress. The employees who are attempting to implement the ERP system can run
across many problems that need to be solved in a timely fashion in order to move forward on the implementation. The stress level for the organization can increase as the implementation date gets closer. When different business units are involved, the stress can increase because each unit is attempting to complete the implementation (Abdul-Gader and Kozar, 1995; Kwahk and Ahn, 2009).

During the integration phase, workers must be confident that the newly implemented ERP system covers previous business processes. During this confirmation process, stress can increase because if the current processes are not accurate this could lead to work stoppage and revenue loss. Since the business processes cannot stop because of this, stress can create anxiety. Integrating the new ERP system with the current processes as well as the creation of new processes can create a challenge for an organization’s business units (Fisher and Wesolkowski, 1999; Barki and Pinsonneault, 2005).

During the application phase, the workers must learn the new ERP system. This learning can cause stress to the workers. They must learn the new system in order to complete their tasks. If they do not learn the new ERP system, this can cause stress to the workers. This stress can lower an employee’s productivity as well and his or her effectiveness for the business unit. This stress needs to be managed in order for the ERP system to be implemented, integrated, and applied properly to an organization (Kwahk and Ahn, 2009).

The post-implementation phase is the time period after implementation and is when the users are fully interacting with the ERP system. This is when the users "field
test" the system and determine how well the system functions and addresses all their needs. If the users have technical difficulties interacting with the system, they can become frustrated and can become stressed because they cannot complete their job tasks. According to the Ifinedo et al. study, there is a positive relationship between service quality and individual impact. This means if an ERP system operates well and with little technical issues, users tend to be emotional happier with the system. But if the system is failing, the user becomes irritated which can create a negative work environment. The negative work atmosphere can lead to a higher level of work stress (Ifinedo et al., 2010).
Chapter 4

RESEARCH METHODOLOGY

Qualitative Research Method

This study uses the exploratory approach in examining management factors that affect technostress by using the qualitative research method. Qualitative research allows the ability to provide a complex textual description of how individuals are affected by the research topic, in this case, technostress. This type of method places the issue in a "human" context rather than a strictly quantitative context. Qualitative research can be effective when exploring intangible factors such as social or behavioral influences (Mack et al., 2005).

There are three common qualitative methods that are typically used: in-depth interviews, participant observations, and focus groups (Table 1) (Mack et al., 2005).

<table>
<thead>
<tr>
<th>Qualitative Method</th>
<th>Usage</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-depth interviews</td>
<td>For collecting data on individuals' personal histories, perspectives, and experiences (specially if there are sensitive topics are being explored)</td>
</tr>
<tr>
<td>Participant observations</td>
<td>For collecting data on naturally occurring behaviors in their usual contexts</td>
</tr>
<tr>
<td>Focus groups</td>
<td>For eliciting data on the cultural norms of a group and in generating broad overviews of issues of concerns</td>
</tr>
</tbody>
</table>

Table 1 Common Qualitative Methods

For this study, in-depth interviews were used in order to provide the perspective of the actual individuals who are affected by technostress. This type of method uses open-
ended questions that allows for flexibility for deep probing of the research topic. Depending on the respondent's answers will determine the direction of the interviewing questions. For exploratory studies, this can be important in determining the underlying factors that may affect the issue that is being studied (Britten, 1995; Mack et al., 2005).

The qualitative research method does have their limitations. One main limitation is that no numerical data is obtained that can be statistically analyzed to determine and support correlates or relationships. Qualitative research method has only textual data that can be interpreted to explain relationships. Another limitation is the ability to compare the results of this qualitative study with another study. Because of the flexibility of the qualitative method, it can be difficult to compare the results of this study with a future study unless the future study uses similar questions (Britten, 1995; Mack et al., 2005).

Data Analysis Steps

A thorough literature review using the Academic Search Premier was performed using the following search parameters: technostress and enterprise resource planning. The data for this research was collected, handled, and analyzed by following steps shown in Figure 4.
Three types of research interviews are structured interview, semi-structured interview, and unstructured interview. A structured interview is a structured questionnaire, while an unstructured interview is less structured and more free-formed. The semi-structured interview is based on open-ended questions. This project used the semi-structured interview method. In this type of research, a list of questions was used on specific topics, and it allows more freedom for interviewees to response. Since this study is based on the perceptions of the interviewees, this method of interviewing is more conducive in determining their feelings about management influences, technostress, and productivity. The main objective of the interview is to understand the management role in relation to using an organization's ERP system (Britten, 1995).
The individuals who were interviewed for this study are employed at Health Net Incorporated which is a health care management organization company. Its corporate office is located in Woodland Hills, California. The two employees work at one of Health Net’s offices in Rancho Cordova, California. Interviewee 1 is a finance manager and interviewee 2 is a financial analyst who is the subordinate to the finance manager. These two individuals were chosen for the interview in order to closely examine the manager-subordinate relationship as well as their views on management factors, technostress, and productivity (Figure 5).

![Organizational Chart of Interviewees](image)

Figure 5 Organizational Chart of Interviewees

The interviews were performed on November 24, 2010. The interview consisted of open-ended questions to obtain detailed information about work relationships, work overload, technical support, role ambiguity, job security, technostress, and productivity that occur at Health Net. The interview is the primary source of data to determine if the management factors found in the literature review is relevant. Each interview took about an hour to complete. Based on the literature review and the interviews, propositions between management factors and technostress will be formed.
Chapter 5
DATA ANALYSIS AND RESULTS

Literature Search

A literature search was performed on technostress, and thirty-nine articles were discovered. The articles could be organized into four different categories as shown in Table 2.

<table>
<thead>
<tr>
<th>Search Topic</th>
<th>Category</th>
<th>Article Year Range</th>
<th>Number of Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technostress</td>
<td>Effectors</td>
<td>1985 - 2007</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Organizational</td>
<td>1988 - 2007</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Health</td>
<td>1993 - 2007</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Productivity</td>
<td>2006 - 2007</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Total Articles:</td>
<td></td>
<td>39</td>
</tr>
</tbody>
</table>

Table 2 Technostress Search Results

The productivity category for technostress has the lowest number articles (5) and smallest year range. This would suggest that this specific category is a relatively new research area. Based upon this, performing a study about technostress and productivity would be prudent and informative.

A literature search was performed on enterprise resource planning and productivity (within the same search parameters). These articles could be organized into three different categories as shown in Table 3.
The post-implementation category for ERP which includes productivity, measurement of ERP success, and ERP optimization has the highest number of articles (33). This suggests that this is an important area of research. By examining and understanding how productivity is affected by the ERP system and how well the ERP system performs, an organization can determine how it has affected the efficiency and effectiveness of the organization.

Based upon the literature review of technostress and enterprise resource planning, an interesting area to examine would be how management factors affect technostress. The Tarafdar et al. study has shown a strong relationship between technostress and productivity. By examining effectors of technostress that management has control over, this would demonstrate how management can affect an organization's productivity.

Personal Interviews

To explore this possible relationship between management factors and technostress, personal interviews were conducted to gather valuable insight. According
to the interviewees, the relationship between management and employee is important in the workplace. Having a positive relationship with a supervisor not only can lead to being more productive, but can build trust between the supervisor and the employee. This trust can lead to a better work relationship as well as a better personal relationship. But even with a good relationship with a supervisor, work-related stress is present. Having a negative relationship between the supervisor and employee can amplify and intensify stress and create animosity (Hidalgo, 2010; Kurihara, 2010).

Based on the interview with the financial analyst, he has a positive relationship with his supervisor. His supervisor gives him the resources to perform his job duties and allows him the freedom and latitude to complete his assigned tasks. His major work assignments are to complete the monthly financial reports for the finance group. Besides these reports, his supervisor does not assign large amounts of additional work, because she does not want to overload him. By assigning him enough work to complete, hopefully he will not be inundated with work (Hidalgo, 2010; Kurihara, 2010).

Based on the interview with the finance manager, the opposite is true. She has a negative relationship with her supervisor. The vice president of finance is constantly assigning her additional tasks to complete besides her monthly forecasts. She has the resources to do her job, but becomes overwhelmed with all the tasks she needs to complete. Because of the large volume of work, she regularly does work at home. Many of these tasks are outside of her job duties (Hidalgo, 2011; Kurihara, 2010).

Both interviewees rely heavy on the ERP system to complete their job tasks. Without the system, it would be extremely difficult to finish their reports and forecasts.
Work overload can create technostress when using their ERP system. Management pressures the employees to complete their tasks, and this makes the workers become stressed. Anxiety increases because of the possibility of not completing their job tasks on schedule. Sometimes because of the urgency of the task, the workers feel stressed and this is when mistakes can occur. Because of the management pressure, these errors can affect the accuracy and usefulness of the reports (Hidalgo, 2010; Kurihara, 2010).

Based on the interviews, technical support also plays an important role. If the ERP system is not working properly, technical support is crucial. In the past year, Health Net has outsourced their technical support in order to reduce their operating cost. The interviewees explain that at certain times, the ERP system can malfunction, and it needs to be fixed. In order to accomplish this, technical support needs to be notified, and a remedy ticket is issued for the problem. Depending on the type of error, the fix time can range from a few hours to a couple of days. This lag time can affect the amount of time it takes the workers to complete their job tasks which can lead to work-related stress (Hidalgo, 2010; Kurihara, 2010).

With the implementation of the ERP system, new business processes are usually created. When this occurs, roles within an organization need to be re-aligned. According to the interviewees, this re-alignment can create role ambiguity. In their experience, management sometime does not define their new roles. The organization chart may change, but their job duties may not. Because of this ambiguity, the interviewees feel uneasy, but they attempt to cope with it and complete their job tasks (Hidalgo, 2010; Kurihara, 2010).
In theory, ERP systems are suppose to increase an organization's efficiency which can lead to task elimination and job duty reduction. Based on the interviewees, this has occurred in their organization. Because of the downturn of the economy and introduction of new ERP system functions, some job duties for workers have been eliminated. This led to some organizational layoffs. Because of this, it can create a sense of job insecurity. The remaining employees feel they need to justify their work in the organization in order to prove to their management the value of their work (Hidalgo, 2010; Kurihara, 2010).
Chapter 6
PROPOSITIONS
Management, Technostress and Productivity under ERP

After examining the comprehensive literature review on technostress and enterprise resource planning, there were a few areas where research could be performed to further examine effectors of technostress. Based on my analysis, one area of technostress that has not been sufficiently addressed is the role of management. Many of the papers address technology factors and personality factors that affect technostress, but few papers mention about management factors. None of the researched papers addressed how management can influence those management factors.

Based on the literature, technostress also affects many different aspects of an organization such as worker's health, organizational functions, and productivity. From a business perspective, productivity is probably the most important area to address because an organization that is more productive is usually more profitable. The increase in revenue allows an organization to allocate those resources in a more effective way. One such way would be to mitigate and manage organizational and health issues of its workers.

As the literature review has shown, there were numerous papers addressing integration, implementation, and post-implementation of ERP systems. These systems were used in many different industries from computer companies to government agencies. There was limited number of papers that discussed the role of ERP systems in the healthcare industry. With the papers that did discuss healthcare, none of them
represented the health maintenance organization (HMO) side. Because of possible healthcare reform, healthcare companies need to become more efficient and productive in their business processes such as claims processing and financial forecasting in order to be profitable. One such way is the use of an ERP system. None of the papers in the literature review addresses the use of an ERP system in the context of technostress in the healthcare industry. More specifically, in the HMO side of healthcare.

With the information obtained from the literature review and interviews, a possible framework can be designed and constructed in order to help organization's mitigate technostress (See Figure 6)

Based upon this framework, internal influences can affect management factors. In this case, internal influences refer to internal management environment such as management and organizational culture. Management has direct influence over management factors, while organizational culture is composed of the cumulative attitude of the workers in the organization in which management sets the tone.
In the proposed framework, management factors can affect technostress which in turn affects organization output. In this case, organization output can consist of an organization's productivity, organizational issues, as well as health issues of its employees. These organization outputs all affect an organization's effectiveness. This effectiveness translates into higher profitability and increases an organization's competitive advantage. An organization can use the framework presented in Figure 6 to manage and mitigate technostress in its workforce.

Management Influence

In the case of technostress, the management factors, work relationship, work overload, technical support, role ambiguity, and job security, can be associated with the interaction with an organization's ERP system. One area that the Tarafdar et al. (2007) study does not address is the role of management in their model. It is widely believed that management affects productivity because it can influence the organizational environment and culture. Depending on the effectiveness of management will determine the amount of influence it has on the group. The environment in which management creates can also attribute to the amount of organizational stress.

Management has the ability to affect an organizational environment. If the employees like and respect the management, management has more power and influence to complete a project’s tasks. The underlying characteristic of this is control. The amount of control management applied to its members can affect a group’s attitude and behavior. The relationship between management and its employees plays an important
role in how readily it can affect technostress. By studying the management influences and its effect on technostress, a correlation may be ascertained.

Work Relationship and Technostress

The manager-employee relationship can be an important factor in affecting technostress. Based on the interviews, having a good and positive relationship with your supervisor can make a difference in stress level. Because of the positive nature of the relationship, the workers begin to trust and have faith that the manager is on his or her side. This positive view decreases a worker's stress (Kurihara, 2010; Handy, 1993; Fiedler, 1996; Strang, 2004). As the work relationship becomes more positive, the amount of technostress decreases. Based upon this idea, the first proposition is stated as follows:

Proposition 1: The work relationship between supervisor and subordinates can negatively affect technostress.

Work Overload and Technostress

A properly implemented ERP system can increase an organization’s productivity and increase access to important business data (Michie, 2002). This quick and instant access allows workers the ability to perform their jobs more efficiently and effectively and can increase the flow of information. If workers cannot filter and process this large amount of information, business processes can be adversely affected. Because of this
ease of access to information, management is under the impression that job tasks can be completed quicker than they can actually be done (Brillhart, 2004). The ability of the users to use the ERP system comes into question because of work overload (Chou and Chen, 2009). Based upon the quick access to information and management expectations, I propose that management has higher performance expectations for its employees and assigns task that cannot be completed in the required amount of time. The interviewees' responses support this assertion. Both of the interviewees agree that the ERP system does assist them in the completion of their work tasks, and they believe management expects more work from them because of the ERP system (Hidalgo, 2011; Kurihara, 2011). Not only does the amount of work increase, but it also creates a work environment where tasks are rushed in order to be completed which can lead to inaccuracy. As work overload increase because of management influences, the level of technostress increases. Based upon this idea, the second proposition is stated as follows:

Proposition 2: Work overload can positively affect technostress.

Technical Support and Technostress

Many organizations place enormous amounts of resources into employee support system such as human resources. This is in large part because of worker’s rights and laws and reduces an organization’s liability. Technical support is another area that organizations allocate resources. When an organization implements an ERP system, workers need to learn how the new system functions in order to perform their job. When
issues with the ERP system occur, workers need a method to resolve them. Technical support is one resource that can accomplish this (Fisher and Wesolkowski, 1999; Ifinedo et al., 2010). In some organizations, management neglects technical support for its workers especially in an organization’s informational systems, and this neglect can have adverse affects on an organization’s employees (Scott, 2008).

The interviewees feel they have the proper technical support for their ERP system. When issues arise, they are able to resolve them relatively quickly. This allows them to continue and complete their job tasks (Hidalgo, 2011; Kurihara, 2011). As proper technical support increases for an organization, the amount of technostress decreases. Based upon this idea, the third proposition is stated as follows:

Proposition 3: Proper technical support can negatively affect technostress.

Role Ambiguity and Technostress

The implementation of an ERP system creates new business processes in an organization and increases an organization’s effectiveness. Because of these new processes, the workers’ roles can change. Management determines how these roles are expanded or contracted depending on the new system (Michie, 2002; Arnold, 2007; Dechow and Mouritsen, 2005). Role ambiguity can affect a worker’s productivity because he or she is unsure of his or her role in the organization (Tarafdar et al., 2007). Management tends to want more work from its employees especially if the ERP system increases an organization’s efficiency. This is where problems can occur. As role
ambiguity increases for workers in the organization, the level of technostress increases. Based upon this idea, the fourth proposition is stated as follows:

Proposition 4: Role ambiguity can positively affect technostress.

Job Security and Technostress

The use of an ERP system improves an organization's business processes and makes them more effective. When this occurs, job tasks can be automated or eliminated because of the efficiency of the new system. Management can force its workers to learn and use the new ERP system which can create technostress. This added stress could lead to job insecurity because for the workers who do not embrace the ERP system, this can create anxiety and nervousness about their job (Wang et al., 2008). As job security for the workers decreases, the amount of technostress increases. Based upon this idea, the fifth proposition is stated as follows:

Proposition 5: Job security can positively affect technostress.

Technostress and Productivity

According to the Tarafdar et al. study, many factors affect technostress. Technology allows individuals to be constantly connected, and individuals can be reached at any moment in time. This connectivity can increase stress. Because of the
connectivity, individuals selectively need to filter and manage this information which can lead to multi-tasking. This flood of information can lead to information fatigue. Organizations are constantly adopting new technologies, and individuals must learn how to use these new technologies or they may become obsolete. Interfacing with the new technology can also lead to technostress. Tarafdar et al. study showed a strong relationship between technostress and productivity. The data for this study was collected from a wide range of industries, but did not target a specific industry such as healthcare.

Based upon the literature, one area of health care that has not been examined is the role of healthcare maintenance organization (HMO). This is an important segment of the healthcare industry because these organizations function as the payers of healthcare to providers. Without HMO, providers would not be able to receive timely payments for their patient's services. HMO has many different functional groups in its organization. Implementation of an ERP system such as SAP allows integration of these business functional groups. This cohesive connection between different areas of the organization can create a competitive advantage over its competitors. Although ERP systems can be extremely difficult to implement, they can be very effective in decreasing operating costs and increasing productivity. But with the application of any technology, stress follows. Although some stress can increase productivity, too much stress can be disastrous to an organization. During the ERP application process, workers learn how to use the system, but even after this learning process is complete, the users of the ERP system can still experience technostress. Post-implementation of an ERP system can create technostress, and organizations need to control this in order for it to be successful.
Based on the above concepts and possible relationships, the proposed model for antecedents of technostress and its impact on productivity is presented below.

In order to test the proposed model, a survey could be designed and administered in order to obtain data. The data could be analyzed by factor analysis and linear regression in order to suggest the above correlation and relationships. An example of a possible survey is in Appendix A.
Chapter 7
DISCUSSION

Work Relationship

The literature as well as the interviewees suggests that having a good relationship with his or her manager is important in the workplace. A positive manager-employee relationship creates a sense of trust and loyalty for the workers. This loyalty can make the employees work harder for their supervisor. Some worker will have initiative to increase their workload in order to complete their job duties more quickly. The opposite can also be true. If the relationship between the manager and worker is negative, the workers attitude would also be negative. This leads to irritability and can increase both work stress and technostress.

The work relationship is a key component in laying the foundation of management factors that affect technostress because it creates a specific worker's mindset. Having a positive attitude allows an employee to work more effectively which could lead to being more productive. Positive mind equals positive outlook which can translate into reducing an individual's stress.

Work Overload

The literature suggests work overload can have an effect on technostress, but the papers do not explain or demonstrate how management influences this factor. In the context of an ERP system, management may have an effect on work overload. According to the finance manager and financial analyst who were interviewed, this may be the case. Management is constantly pressuring them to complete their job tasks. The
pressure of work overload can lead to technostress. The finance manager receives a large portion of the stress because of her position in the company, but a substantial amount of the technostress is received from her working relationship with her boss. If a survey was conducted, the data could be analyzed to support this relationship between work overload and technostress. The data could also suggest that workers who are given large amounts of data to process in a shorter period of time are forced to work much faster because of management's higher expectation. Because of the ERP system, management assumes that its workers can finish their tasks faster. This motivates management to increase its employees' work. As workers receive more job tasks, in theory, the ERP system would allow them to complete their job tasks faster. This added pressure to complete these job tasks can increase technostress. Not only would the work amount increase, but the work priorities would also change. The constantly changing work priorities would also add to the amount of stress. And based on the interviewees, this occurs frequently during their work week.

Both interviewees for this study stated that at certain times when using their organization's ERP system, they feel overwhelmed. In the context of using an organization's ERP system, the workers become stressed because they become inundated with all the job tasks that need to be completed. The compulsion to complete this job task overcomes the workers and increases their technostress. Their anxiety also increases because of the amount of work that needs to be accomplished in such a short amount of time. The finance manager has specific monthly and quarterly reports to complete and that are due at the beginning and ending of each month. Besides these particular reports,
management also requests additional ad-hoc reports. The organization's ERP system plays a key role in creating the reports. According to the finance manager, she would not be able to complete her reports without it. Her reliance of the ERP system can cause anxiety especially if the system does not function properly. With the amount of report that she has to complete, she can easily become overwhelmed. The interviewees stated that this overwhelming feeling can motivate them to start pursuing new career options. If this is the case, the technostress can not only affect an organization's worker turnover rate, but would be detrimental to an organization's effectiveness and productivity.

Technical Support

According to the interviewees, Health Net provides the proper technical support for its ERP system. Both interviewees feel that the technical support is extremely good. Because of this, management has a high expectation for their work output. Based on the interviewees, technical support can affect technostress. If the users have the proper technical support to resolve their issues, the amount of technostress would be reduced. Knowing that the ERP issues can be fixed quickly gives its user peace of mind, which can translate into a lower level of stress. The interviewees have stated that when they use technical support for their ERP systems, their issues are resolved quickly and timely.

The interviewees stated that they have accessibility to their organization's technical support whenever issues arise. Workers who have access to the necessary support and tools can decrease their technostress because they do not have to stop and research on how to solve their issues. Work stoppage because of a system issue can be frustrating for the workers. When the ERP system is down, the finance manager and
finance analyst cannot complete their work. Without the system, their productivity for the day can decrease. Having technical support readily available to solve their problems can reduce their technostress and possibly increase their productivity.

According to the interviewees, their organization's technical support helps them complete their job tasks. When issues emerge, technical support usually solves them in a reasonable time. Depending on the type of ERP issues, the resolution time can be between a few hours to a few days. The faster technical support can resolve the issues, the better it is for the workers. Idle time can be detrimental for an organization's effectiveness and efficiency. It can also lead to an increase in technostress because of the work stoppage. If the ERP system is not functioning properly, the workers cannot complete their job tasks especially if the ERP system is necessary.

Role Ambiguity

Using an ERP system increases the effectiveness of an organization's workers. It can create more efficient business processes as well as new job tasks. It is necessary for management to re-define and assign this new tasks and processes to the workers. If this is not done, the workers can become frustrated because they do not know who is responsible for the new processes. For individuals who have initiative, this is not usually an issue because they are willing to accept the new responsibility. For other workers, if they are not specifically assigned to a task, they will not do it. Because of the unclear role definition, many workers can suffer from role ambiguity. This uneasiness can affect workers by creating a sense of uncertainty that can lead to technostress. Role ambiguity can lead to tasks not be completed and ultimately decreases an organization's efficiency.
The uncertainty of not knowing who is responsible can create anxiety of the workers. The job tasks can be shifted from one functional group to another which is inefficient. The ERP system can create an environment where this role ambiguity can thrive unless management uses its influence to dictate the workers' specific roles. Without management intervening, role ambiguity will increase amongst an organization's workforce.

Job Security

One reason for implementing an ERP system is to reduce operational costs for an organization. One consequence of this action could be a reduction in an organization's workforce which can create job insecurity for the remaining workers. Management influences can also affect this job security by forcing the remaining workers to learn the new system. If they do not, they could be replaced by management. This anxiety of learning the new processes could lead to technostress. Workers must be willing to embrace the new technology.

Possible Relationships

This study has possible effects on an organization's management. Based upon the interviews, management factor can have an effect on technostress which in turn can affect productivity. Based on the model, the following relationships could be possible (Table 4).
The work relationship, technical support, and job security management factors have an inverse relationship with technostress, while the work overload and role ambiguity management factors have a direct relationship with technostress.

If the above relationships are correct, the following concept would be true. First, by examining the specific management factors of work relationship, work overload, technical support, role ambiguity and job security, management can implement different methods to control these factors in order to increase worker's productivity. Being aware of these management factors will allow management a better understanding on how to increase productivity. Second, management can alter an organization's culture in order to decrease technostress and increase productivity. Altering an organization's business culture can change the worker's attitudes. Having workers who can positively thrive in its organization's work culture allows management to focus its workforce towards being more effective and productive. An organization that becomes more efficient reduces it operating costs. Third, the idea of technostress can be brought to the attention of
management. Usually work-related stress is associated with job tasks and job roles. Technostress is not usually mentioned when it comes to stress. By identifying what factors affect technostress can assist an organization in reducing job-related stress.

When an organization understands what factors affects technostress, it can implement processes or programs that help manage it. Technostress-reduction practices such as limiting the amount of exposure to the technology can be implemented. Another practice that can be introduced is having the supervisors understand the capabilities and limitations of the technology. This would allow the supervisors an opportunity to understand the amount of work that can be processed and completed with the technology. If an organization can minimize work-related stress such as technostress, it can become more efficient and effective in its business practices.

If the survey was administered to a group, the data could be used to reinforce the above relationships. Factor analysis and linear regression could be applied to the data in order to suggest this correlations and relationship that were stated by the interviewees. The Tarafdar et al. study has shown that there is a relationship between technostress and productivity. This means there is an inverse relationship with productivity. As technostress increases productivity decreases.

If the relationships presented in Table 4 are correct, management should be able to increase its work forces' efficiency. A balance among all the management factors could be maintained in order to increase productivity to a higher level.
Limitations

This study does have limitations. First, this study only examined a specific industry and targeted specific users in this area. Findings from other industries and other specific areas could yield different results. Second, because of limited resources, a survey was not completed. If a survey is going to be administered, obtaining a large sample size will be necessary in order to validate the proposed relationships. Obtaining survey data would also add a quantitative component that could strengthen relationship between management factors and technostress. Third, the interviewees used in the study are both from an organization's finance group. It is possible that if a different set of interviewees were used, a different viewpoint or perceptive would be observed.

Future Directions

Because of the limitations of this study, it allows for a large range of future directions. First, it is possible to examine external influence that affects management factors. Some external factors could be government regulations, changes in the market, and competition. Studying these external influences could provide a better understanding on how to manage and control the amount of technostress in an organization. Second, examining different industries might prove to be useful in controlling technostress. Existing fields as well as newly developed fields could benefit from this type of study. Third, examining how management style affects these different types of management factors could also be insightful. This would allow users to understand how management style affects the different management factors. Fourth, examining how the different effectors influence each other can help us develop a new framework that can be used to
control and manage technostress. An organization could use the newly developed framework to reduce work-related stress which in turn could increase productivity.
Chapter 8

CONCLUSION

With technology being so readily available to organizations, understanding how it affects an organization's workers is important. Determining different factors that affect the workers can be instrumental in increasing productivity. One area that can affect this is management. Because of management's influence, management factors can affect technostress. Based on the literature review and the interviews, the management factors of work relationships, work overload, technical support, role ambiguity, and job security could affect technostress which in turn can affect an organization's productivity.

By understanding how management and management factors can affect work-related stress such as technostress, an organization can learn how to minimize and control it. When an organization can control work-related stress, it can affect its productivity. This productivity can lead to being more profitable and efficient. This efficiency can lead to reducing an organization's operating cost and increase an organization's effectiveness.
APPENDIX A

Sample Survey

Survey on Management Factors, Technology Stress, and Productivity

Thank you for participating in the following survey that addresses how management factors affect technology stress and productivity in the context of an organization’s Enterprise Resource Planning (ERP) system.

An ERP system is an integrated computer-based application that is used to manage internal and external resources, including tangible assets, financial resources, materials, and human resources. The following survey consists of twenty-three questions that ask your opinion about management, technology, and organizational roles. The survey should take about 5 to 10 minutes to complete. Please choose your answers from the following scale:

1 – Strongly disagree
2 – Disagree
3 – Neither agrees nor disagrees
4 – Agree
5 – Strongly agree

1. Do you use an ERP system at your workplace? (For example, SAP or SAS, but does not have to be limited to these two). If yes, what type of system do you use?

__________________________________________________________________________

If the above answer is yes, please continue taking the survey. If no, you can stop taking this survey. Thank you for your time.

Work Overload

2. I feel my supervisor expects me to process large amount of data in a short period of time.

3. I feel my supervisor assigns more tasks to me than I am capable of completing.

4. I feel overwhelmed with the work tasks I need to complete.

Role Ambiguity

5. I feel my supervisor does not explain my role in my organization.
6. I feel my supervisor assigns tasks that extend past my job duties.

7. I feel I perform tasks that are supposed to be completed by another person or group.

Technical Support
8. I feel my organization has the proper technical support to complete my tasks.

9. I feel my supervisor allows me access to the proper technical support.

10. I feel technical support helps me complete my job tasks.

Technostress
11. I am forced to work much faster because of management’s higher expectation and my organization’s ERP system.

12. I am forced to do more work than I can handle because of management’s higher expectation and my organization’s ERP system.

13. I am forced to work with very tight time schedules because of management’s higher expectation and my organization’s ERP system.

14. I am forced to change my work habits to adapt to my organization’s ERP system.

Productivity
15. My organization’s ERP system helps to improve the quality of my work.

16. My organization’s ERP system helps to improve my productivity.

17. My organization’s ERP system helps to perform my job more accurately.

18. My organization’s ERP system helps to complete my task more quickly.

Information about you
19. What is your gender?
   a. Male
   b. Female

20. What is your highest educational degree earned?
   a. High school
   b. Two-year college
c. Bachelor’s degree
d. Master’s degree
e. Doctoral degree (PhD, MD, or JD)
f. Other

21. What department or functional group do you work in?
a. Medical Practitioner (Doctor, Nurse, etc)
b. Corporate Management
c. Finance
d. Operations
e. Informational Technology
f. Other

22. How many years have you been at your current organization?
a. 0 – 5 years
b. 5 – 10 years
c. 10 – 15 years
d. 15 or more years

23. How many years have you been working in the Management Informational System (MIS) Field?
a. 0 – 5 years
b. 5 – 10 years
c. 10 – 15 years
d. 15 or more years
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