THE RELATIONSHIP BETWEEN OFFICE ERGONOMICS PRACTICES AND JOB PERFORMANCE AMONG UiTM SHAH ALAM LIBRARIANS

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ABSTRACT

Much attention has been focused on relationship between office ergonomics practices and job performance. However; relatively limited studies focus on library area especially in Malaysia. The purpose of this study is to examine whether all five independent variables influence job performance among 140 UiTM Shah Alam librarians. Data were gathered through questionnaires and was being analyzed by using Statistical Package for Social Science (SPSS) version 12.

Based on the analysis it was found that factors that contributes to the existing of ergonomics program, ergonomics practices, ergonomics practices in workspace design, ergonomics practices in office equipment and level awareness of office ergonomics practices each made significant contribution independent variables. Hierarchically, these four independent variables are found to be among the strongest variables to compliance with job performance in this organization. Recommendations and implications for future research and practice were also discussed.

ABSTRAK

Meskipun kajian tentang hubungan di antara amalan ergonomik pejabat dan prestasi kerja di dalam organisasi.telah banyak dibuat, namun kajian sebegini sangat terhad diterokai di perpustakaan terutama di Malaysia.

Kajian ini bertujuan menilai semua faktor berkaitan hubungan di antara amalan ergonomic pejabat dan prestasi kerja di dalam organisasi. Data dikumpul daripada 140 pekerja dari pelbagai latar belakang di perpustakkan UiTM Shah Alam, Selangor. Data telah di perolehi melalui soalan dan telah di analisa menggunakan Statistical Package for Social Science (SPSS) versi 12.

Hasil daripada analisa data, empat pemboleh ubah tidak bersandar iaitu faktor-faktor yang menyumbang kepada pengwujudan program ergonomik, jenis-jenis amalan ergonomik terhadap rekabentuk ruang kerja, jenis-jenis amalan ergonomik terhadap peralatan pejabat dan tahap kesedaran amalan ergonomic masing-masing menjadi penyumbang petunjuk yang paling kuat dan mempunyai hubungan positif dengan pematuhan terhadap prestasi kerja.

Cadangan dan implikasi untuk kajian lanjut juga dibincangkan.

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My sincere appreciation goes to the respective individual concerned at UiTM Shah Alam, Selangor especially Encik Mohamad Hamidi Mohd Jais, Senior Library for his support and assistance to gather the data for this research.

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CHAPTER 1

INTRODUCTION

1.1 Background of the Study

People in any organizations are greatest asset and resource. Lee and Miller (1999) found that a dedicated and talented workforce may serve as a valuable, scarce, non-imitable resource that can help organizations execute an appropriate positioning strategy. An organization is productive if it achieves its goals and by transferring to outputs and the lowest cost.

Ahmadi (2009) mentioned organizations that are able to create a positive environment and make their employees happy will have more productive ernployees. In general, productivity is a measure of the output of goods or services relative to the input of labor, capital and equipment. The more productive of an industry, the better its competitive position because its unit costs are lowers. When productivity increases, businesses can pay higher wages without boosting inflation.

According to Sarmiento and Beale (2007), productivity in every manufacturing company depends on many variables. Some of these variables are associated with a more adequate managing and planning of structural issues (for example,

production capacity), whereas other factors are related to more infrastructural aspects of manufacturing operations (for example, employees motivation).

Poorly designed workplaces result in low productivity and quality. Employees require effective, well designed workstations, tools and information to be efficient and productive. Employees that feel better, work better. A higher level of comfort decreases stress and improves employee productivity when employee is uncomfortable accomplishing a task, he or she is more likely not to take the time to do right (Attaran & Wargo, 1999).

Furthermore, the employers that do not enforce safety and health standards throughout the organizations may lead to serious health problems among employees (Cordier, 2005). When employees are not protected on their job their performance and productivity in the organization will be affected (Smith, 2002).

To sustain the workforce, it has become important to ensure a hazard-free and safe environment and it has been embraced by managers that a safe working environment can result employee's efficiency and productivity. Tools and equipment must be designed with the employees in mind and for the job being performed (Garg & Restogi, 2006)

1.2 Problem Statement

This study arises from the need to manage the employee's job performance effectively thru office ergonomics practices in the organization. According to Elmy (2005), Yew and Sean (2002), there are too few promoter in ergonomics in Malaysia, thus it is important to do more researches about ergonomics especially in the context on the relationship of office ergonomics practices to job performance among the staff at library in Malaysia.

Chao, Chang and Chiang (2001) found the impact of computer technology on libraries is changing the face of information services and how these services delivered. Librarians spend a great deal of time on computers to perform basic functions and access library catalogs. The use of computer technology to perform library functions becomes part of daily works and routine. As staffs' daily routine operations become largely dependent, occupationally related illness and injuries have been increasing. Staffs are confined to work on workspace design without enough mobility and body movements.

Poor job performance has a negative impact on productivity and workplace effectiveness and in severe cases it could lead to an increase of workplace accidents and absenteeism. Significantly, when absenteeism always happens among workers, their job performance can decrease. Absenteeism can be considerably more than a disruption, it can result in a drastic reduction in the

quality of outputs or services and in some cases, it can bring about a complete shutdown of the production facility. Level of absenteeism beyond the normal range in an organization has a direct impact on the organization's effectiveness and efficiency.

There are a number of factors which may be affecting employee's performance in organization, for example job satisfaction, training, workplace environmental and others. Wan (2007) mentioned that job satisfaction is an important goal for organization to reach as it has been shown that profitability, productivity, employee retention and customer satisfaction are linked to employee satisfaction. Employee satisfaction also influences employee absenteeism and turnover (Rainey, 1991) and the degree of employee motivation affects employee work efforts and productivity (Lawler, 1994). Hart (1999) concluded that job satisfaction contributes to overall life satisfaction.

Employee turnover has become a serious management problem because of it financial and moral impact on the organization scarce source. Nowadays, organizations are finding it difficult to retain employees as a result of many baby boomers retiring from the workforce. Thus, employee turnover greatly demands management attention and do whatever they can to retain and motivate existing employees.

While Goldstein and Gilliam (1990) found that organizations are faced with increasing competitive pressures to improve their quality of their products and services. Training is considered to be one the most significant processes within the strategic management of human resources. It plays a critical role in maintaining and developing capabilities, both individual and organizational and also substantially contributes towards the process of organizational change (Huselid, 1993).

Ertugal and Ergin (2004) stated that workplace environmental would give a significant relationship towards employee's performance especially in productivity aspects. They found that the poor ergonomics practiced at the workplace would result on poor outcome performance, lost productivity, health and safety problem towards the employees, poor of comfort to the employees and the feelings of unsatisfaction increasing among the employees.

While according to Cully *et al.* (1999), Boselie and DerWiele, (2002), working in team, greater discretion, autonomy in the workplace, various employee involvement and pay schemes do motivate workers and generate higher labour productivity.

Today, most organizations associate the ergonomics with the attempt of business to reduce injuries, increase productivity of the employees such as their

job performance and quality of the job and maximize the comfort of the employees. Most causes of poor productivity, poor quality and accidents at workplace are due to human errors, which can be directly attributed to poor ergonomics. Unsafe acts and unsafe conditions contribute to accidents and it is management's responsibility to reduce or to eliminate such acts or conditions, especially when the unsafe act is inherent in the work method used by employee (Copper & Kleiner, 2001).

The rising costs associated with the work related injuries and illnesses, both direct and indirect often are the result of some problem with interface between a worker and machine system. As technology has lead to increases in automation, so too have work-related illnesses increased (Rowan & Wright, 1994).

Bradley and Wooding (2000) stated that the awareness level of the employees today about their health and well-being is the factor that influence to the demand of ergonomics. Surveyed done among manufacturing industries in Malaysia (by using Quality Function Deployment), the results showed that 35.6% of the industries were classified as having high level of ergonomic awareness, 51% with moderate levels and 13.3% having low level of ergonomic awareness.

Ahasan and Imbeau (2003) seen that ergonomics has a lot to offer in improving working practices and the health and safety workers. Additionally, the process of job change through the introduction of ergonomic consideration s has been

shown to lead both to improved job content and to improved job satisfaction (Das, 1985).

According to the study done by Shikdar *et. al.,* (2002), a manufacturing industry is a complex human-machine-organization system. A system consists of six major components, which are human operator, equipment, task, workplace, environment and management. Efficient function of ergonomics in the system components can attain stability between worker's characteristics and task demands. This will increase job satisfaction which resulted into worker's productivity, provide worker's safety that lead to reduce compensation cost and reduced musculoskeletal disorders (MSD).

1.3 Research Questions

This research was conducted to find the relationship of the independent variables, which are factors that contribute to the existing of ergonomics program, types of ergonomics practices in this organization (video display terminal, workspace design and office equipment), level of awareness of office ergonomics practices with the dependent variable, which is job performance (productivity, organizational stress, absenteeism and accident). Therefore, this study intends to answer the following questions:

1. What are the levels of effectiveness of the ergonomics practices in Video Display Terminals (VDT), workspace design and office equipment among UiTM Shah Alam librarians?

2. What are the levels of awareness of the office ergonomics practices among UiTM Shah Alam librarians?

3. How is the relationship between office ergonomics practices and employees job performance among UiTM Shah Alam librarians?

1.4 Research Objectives

The main objective of this study is to determine which variables contribute to job performance. Specifically, this study is intended to achieve the following objectives:

1. To identify the level of effectiveness of ergonomics practices in Video Display Terminals (VDT), workspace design and office equipment among UiTM Shah Alam librarians.

2. To identify the level of awareness of office ergonomics practices among UiTM Shah Alam librarians.

3. To investigate the relationship between office ergonomics practices and job performance among UiTM Shah Alam librarians.

1.5 Significance of the Study

The significance of the study is to provide information to UiTM on how office ergonomics practices will contribute to the employee's job performance. The result and findings of this study could be used by UiTM to strategize their office ergonomics practices in order to improve job performance especially on productivity.

This study is an important tool to the top management of UiTM to understand how office ergonomics practices will impact the employee's performance and organization as well. Therefore it could be the determinants towards making more reliable decisions on safety awareness programs and implementation of such programs to particular employees.

There was not much research on these issues that was being done in Malaysia especially in an educational field and majority of the cases referred were conducted in overseas and are based on business-oriented organization. In the academic world, the result and findings of this study may contribute to the

additional literature and to the body of knowledge for future improvements and development especially to non-western study in the area of the office ergonomics practices among librarians in university setting.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter begins with a review on the concept of ergonomics, job performance, the importance of office ergonomics practices, ergonomics and job performance and the resource-based view of the organization. An overview of previous studies on the researches that has been done in ergonomics practices is also discussed.

2.2 Concepts of Ergonomics

In Malaysia, ergonomics has been introduced over a decade ago with the establishment of the ergonomics division in the National Institute of Occupational Safety (NIOSH) on 1st December 1992. The ergonomics movement started from the foreign top management (such as from Japan and United State of America) working in Malaysia multinational manufacturing industries. They could see the benefits of ergonomics implementation in term of improving the productivity, quality and Occupational Safety and Health (OSH) towards the employees when it was implemented. Thus, they encouraged local industry to adopt ergonomics. The application of ergonomics in industry is also to fulfill the third objective of

OSH Act 1994 that is introducing the working environments that can fulfill the physiology and psychology of the employees.

According to Jeffress (2003), ergonomics is the science of fitting the job to the worker and best defined as a good business because good ergonomics is good economics. It is about working smarter and safer. The word ergonomics was coined to name the filled of study that integrates knowledge derived from the human sciences to match jobs, systems, products and environments to the physical and mental abilities and limitations of people (Bohlander & Snell, 2004).

Webster's dictionary defines ergonomics as the study of equipment design in order to reduce operator fatigue and discomfort. Also known as human factors or human engineering it basically describes the interaction between an employee and their job functions with the emphasis being on reducing unnecessary physical stress in the workplace.

Ergonomics deals with a system of interacting components which includes the employees, the work environment both physical and organizational, the task and the workspace. The goal of ergonomics is to ensure a good fit between the employees and their job, thereby maximizing worker comfort, safety, productivity and efficiency (Wright & Rowan, 1994).

Ergonomics is defined as the design of the workplace, equipment, machine, tool, product, environment and system. Taking into consideration the human's physical, physiological, biochemical and psychological capabilities and optimizing the effectiveness and productivity of work systems while assuring the safety, health and wellbeing of the employees. In general, the aim in ergonomics is to fit the task to the individual, not the individual to the task (Fernandez, 1995). Ergonomics is all about studying how to improve the fit between the physical demands of the workplace and the employee who perform that work (Feare, 2001).

Wargo and Attaran (1999) examined four factors leading to adoption of ergonomics across a wide range of industries:

- *Costs*. Rising health cost and rising labor costs have brought about the concern for the physical well-being of employees. According to NIOSH the total cost to the country for back injuries is estimated between $20 billion and $50 billion each year (Andes, 1992). Occupational strains and sprains cost over $40 billion each year in the United State of America. A recent study indicates that only 15% of the employees account over 85% of a company's compensation claims. Over 5 million employees file claims from overextension-related injuries and over 8,000 employees die from impact injuries (Vasilash, 1990). Some companies have recognized the role that ergonomics can play in reducing this massive cost burden.

For example, Matsushita Appliance Corp. of Danville, Kentucky has implemented changed its process to reduce costs and worker's compensation burden.

- *Quality and Productivity.* Poor designed workplaces result in low productivity and quality. Highly skilled technology employees require effective, well designed workstations, tools and information to be efficient and productive. When an employee is uncomfortable accomplishing a task, he or she is more likely not to take the time to do it right. Ergonometric changes contributed to an increase of 40% in productivity (Trunk, 1992).

- *Government Regulations.* Federal officials have called poor ergonomics the occupational health issue of the 1990s. In facts, it accounts for over 60% of workplace of ergonomics injuries. Law regarding ergonomics is being enacted for more industries and more countries. More than 30 countries have created organizations similar to the OSHA that enforce ergonomic legislation and can apply severe sanctions and punishments, both to companies and individual managers.

2.3 Job Performance

Productivity refers to the ration between the actual result of the transformation process and the actual resource use. Productivity relates effectiveness to efficiency and therefore it makes both criteria simultaneously controllable (Veld, 1998).

$$\frac{\text{Actual result (output in quality and quantity)}}{\text{Actual resource use (input in people and means)}}$$

The organizational productivity is optimal when an organization produces as great a result as possible at the lowest possible at the lowest possible resource use. Nowadays there are two important approaches that contribute to organizational performance (Ree, 2002):

- *Efficiency.* Achieving greater efficiency by reducing the occupancy costs by reducing the amount of space per employee; and

- *Effectiveness.* Achieving greater effectiveness by improving the productivity of the employee by providing a comfortable and satisfying work environment.

2.4 The Importance of Office Ergonomics Practices

Work-related accidents cause serious problems in any organization and place huge costs on industry and the nation. The average of work-related accidents in Malaysia over a 9 year period from 1995 to 2003 was 91,249 cases per year, which works out to an average daily rate of 250 work-related accidents in Malaysia. In 2003, the Social Security organization (SOCSO) of Malaysia paid work-related compensation estimated at RM305 million (New Straits Times, 2004). Meanwhile in the USA, the total cost of work-related accidents is close to US$110 billion annually (Vredenburgh, 2002).

Aminudin (2001) reported that Malaysia has one of the highest rates of industrial accidents at the workplace. The manufacturing sector reported the highest number of industrial accidents from 1999 to 2003 compared to other industries (Khan *et. al.*, 2005). The consequences of accidents at workplace are financial costs, losses of output, lowered morale and negative publicity.

Kleiner and Cooper (2001) noted that the most common injuries related to poor ergonomics are known as Musculoskeletal Disorders (MSDs) and also called Repetitive Motion Injuries or Cumulative Trauma Disorders (CTDs). These include tendinitis, carpal tunnel syndrome, lower back pain and similar afflictions. Poor ergonomics conditions in industry not only hinder productivity but also affect health and safety of employees and the quality of work and products (Shikdar &

Sawaqed, 2003). The application of ergonomics to the development of a design process clearly improves the productivity, quality and safety performance in the organization. Therefore workplace safety is important to employees' satisfaction with their jobs and with their work productivity (Deane, 2007)

The failure to implement the ergonomics practices at the workplace can lead to emotional depression, physical exhaustive, productivity and products quality declining (Shikdar & Sawaqed, 2003). Work stress is a major issue in the occupational safety and health aspect as well as organizational wellbeing (Williams & Cooper, 2002). According to Thirion *et. al,.* (2007), work-related stress is now among the most commonly reported causes of occupational disease and illness cited by employees, which affecting more than 40 million employees across the European Union. Thus, stress could lead towards health problems like cardiovascular diseases, musculoskeletal disorders, depression and burnout and gastrointestinal (Minter, 1999; Cheng *et. al.*, 2001 & Schermerhorn *et. al.*, 2005).

Aminudin (2010) also has identified that ergonomics can help prevent injuries and limit secondary injuries as well as accommodate individuals with various disabilities, including those with MSDs. This statement supported with a report from the University of Maryland (reported by Bureau of Labor Statistics), whereby the repetitive motion illnesses or cumulative trauma disorder represents half of all occupational illness (Bohlander & Snell, 2004).

Nowadays companies are realizing that making ergonomics changes before major work-related injuries occur is cost effective when compared with making ergonomics changes after major work-related injuries occur (Fernandez, 1995). The International Facility Management Association (IFMA) examined the facilities that are managed well and have high efficiency levels also have significant effects on the performances of the employees and the companies (IFMA, 1999).

Ergonomics has a lot to offer in improving working practices and the health and safety of employees (Ahasan & Imbeau, 2003). The process of job change through the introduction of ergonomics considerations has been shown to lead both to improved job content and to improved job satisfaction (Das, 1985).

2.5 Ergonomics and Job Performance

Ergonomics deals with the application of information about human behavior, capabilities and limitations to design of systems, machines, tools, tasks, jobs and environments for productive, safe and effective human use (Chapanis, 1985). The goal of ergonomics is to ensure a good fit between the employees and their job, thereby maximizing worker comfort, safety and health, productivity and efficiency. When employees' health is enhanced, it is assumed to improve the organization's overall performance and profitability by either increasing worker

productivity or decreasing operating costs such as health care expenditures or time off due to absenteeism (Lynch & Gardner, 2006)

Computer usually known as Visual Display Terminal (VDT) is a medium in which the users and computer interact (King & Chiuan, 2000). VDT has become ubiquitous in the workplace and their use is increasing. The usage of VDT in Malaysia has been drastically since 1996, which correlates to the estimated amount of 4 million personal computers being installed in 2003 (America University, 2005). However, along with the increased use of VDT, there have been reports about the health effects largely related to the musculoskeletal disorders (MSD) such as visual discomfort and other stress related disorders. (Anderson *et. al.*, 1997 & Dahalan *et. al.,* 2003).

Malaysia National Institute Occupational Safety and Health (NIOSH) stated that the Visual Display Terminal (VDT) user is one of the group employees that are exposed to the mental health diseases. The mental health diseases refer to the mental disturbances such as stress, fatigue, anger, depressed, unsatisfactory work and others. Consequently, the productivity of the employees will decrease their emotional will unstable and thus reduced their safety and health (Mustafa, Kamaruddin, Othman & Mokhtar, 2009). Carlopio (1996) found that employees' satisfaction with their work environment is directly related to their job satisfaction and indirectly related to organizational commitment and turnover intention.

Furthermore respondents from 45 companies in Malaysia on the effect of ergonomics applications in work systems on mental health of VDT employees indicated that they believe the application of ergonomics can improve productivity, health and safety of their employees and will results in a better quality of work. The practices of ergonomics in organization can improved safety and health in workplace, improved employee morale and job satisfaction, improved productivity, improved quality of work, improved competitiveness in the marketplace, reduced probability of accidents and errors, reduced absenteeism and employee turnover and reduce medical and employees compensation cost associated with cumulative trauma disorders (Bohlander & Snell, 2004). According to Vanstee (2003), ergonomics can change work environment, can boost productivity and even make employee feel better.

Ergonomics attempt to minimize the harmful effects of carelessness, negligence and other human fallibilities that otherwise may cause production defects, damage to equipment or even the injury or death of employees. Ergonomics contributes to improvement in productivity, improves morale and positive return on investment (ROI). For example, company like Compaq Computer and 3M prove that company achieve cost effective at organization (Bohlander & Snell, 2004).

Fernandez (1995) identified that the application of ergonomics principles in the workplace can increased productivity, improved health and safety of employees,

lower employees' compensation claims, compliance with government regulations (example OSHA standards), job satisfaction, increased work quality, lower work turnover, lower lost time at work, improved morale of employees and decrease in absenteeism rate.

Poorly designed workplaces result in low productivity and quality. Highly skilled technology worker require effective, well designed workstations, tools and information to be efficient and productive. Employees that feel better, work better and a higher level of comfort decreases stress and improves employee productivity. Moreover, when employee is uncomfortable accomplishing a task, he or she is more likely not to take the time to do it right (Attran & Wargo, 1999). The previous researchers found out that when the workstation is perceived as causing stress, it would bring about somatic complaints, job dissatisfaction and attention to quit (Makhbur & Idrus, 2009).

According to a recent study (Mustafa; Kamaruddin; Othman & Mokhtar, 2009), the level of ergonomics awareness in Malaysia manufacturing industries is still in moderate level. Lack information, knowledge and training about ergonomics are the main factors that obstruct the organization in implementing ergonomics programs. Only 13.3% of the respondents were organizing the ergonomics team in industry. The result in this case study shows that application ergonomics Tool factor will give major influence to respondent mental and health in giving them satisfaction in work, increase performance, safety and health.

2.6 Summary

Correct workplace conditions are important factors for health and performance and profitable and beneficial in every way. Indoor environments affect productivity and health problems and worker performance as well (Marshall *et. al.*, 2002 & Fisk, 2000). Improving workplace conditions and health standards assures employee performance. Suited workplace conditions help one to work productively and effectively.

Humans cannot perform well and be satisfied in less-than-ideal environments. Workplace environmental conditions such as lighting, indoor air quality, ergonomics and acoustics have gained attention as part of the growth in interest for internal and external satisfaction and a significant relationship between worker's satisfaction and performance (Varol & Tarcan, 2004).

Ergonomics helps to increase productivity and to decrease health problems of internal customers. In The Ernst & Young Company, 56% of the illnesses originated from the workplace are related to muscle and articulation complaints. The US Bureau of Labor Statistics explained that injuries originating from ergonomics cost American companies $15 to $20 billion in employee's compensation and $30 to $40 billion in indirect expenses such as missed days in 2000 (Allbitton, 2003).

Much empirical research has shown that when human needs are considered in office design, employees work more efficiently (Stallworth & Kleiner, 1996). Improvements in the physical design of office buildings may result in 5% to 10 % increase in productivity (Brill, 1992).

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

The primary objective of this study is to investigate the relationship between offices ergonomics practices and job performance focusing on factors that contribute to the existing of ergonomics program, ergonomics practices in Video Display Terminal (VDT), ergonomics practices in workspace design, ergonomics practices in office equipment and level of awareness of office ergonomics practices.

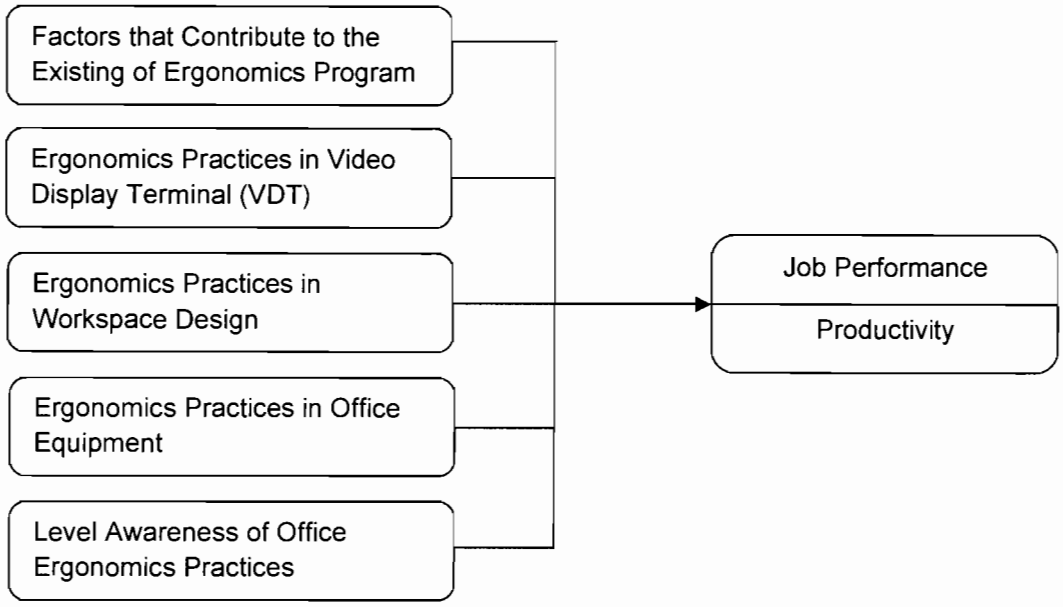
This chapter contains the following sections relating to methodology: (i) research framework and hypothesis development (ii) research design, (iii) measurement and instruments (iv) data collection method (v) variables and measures (vi) pilot test vi) data analysis and (vii) chapter summary.

3.2 Research Framework and Hypothesis Development

After careful consideration of the research questions and objectives of this study and review of relevant literature in chapter two, the theoretical framework and research model is developed and hypotheses are formulated to identify and test the relationship between the various variables identified (see Figure 3.1). Based

on the literature review presented earlier, certain investigative relationships among the study variables are accomplished.

Figure 3.1 – Research Model



The five (5) factors constituted as variable job performance (productivity), which is an independent variable and which is associated to one dependent variable job performance (productivity).

3.2.1 Hypothesis Development

Ergonomics is a significant factor in achieving and maintaining high level of worker productivity (Roper & Yeh, 2007). Ergonomics is a science concerned with the 'fit' between people first, taking account of their capabilities and limitation. Ergonomics aims to make sure that tasks, equipment, information and the environment suit each employee. People come in all shape and sizes, with varying capabilities and limitations in strength, speed, flexibility and skills. All these factors need to be taken into consideration for appropriate workplace design and function (Cooper & Kleiner, 2001).

In the present study we will investigate the effect of five office ergonomics practices: the factors that contribute to the existing of ergonomics program, ergonomics practices in Video Display Terminal (VDT), ergonomics practices in workspace design, ergonomics practices in office equipment and level awareness of office ergonomics practices.

a. Job Performance with Factors that Contribute to the Existing of Ergonomics Program

Nowadays companies are realizing that making ergonomics changes before major work-related injuries occur is cost effective when compared with making ergonomics changes after major work-related injuries occur (Fernandez, 1995).

The International Facility Management Association (IFMA) examined the facilities that are managed well and have high efficiency levels also have significant effects on the performances of the employees and the companies (IFMA, 1999).

Ergonomics program is a systematic process for anticipating, identifying, designing, developing, analyzing and controlling ergonomics risk factors to ensure the health and safety of the employees (Mustafa; Kamaruddin; Othman & Mokhtar, 2009). Furthermore, ergonomics training program also presents positive results in creating awareness, increasing ergonomics knowledge to prevent work related musculoskeletal disorders (MSD) and motivates employees to utilize their creative problem solving capacity (Ulfsalt *et. al.*, 2003 & Shahnavaz, 2000). By increasing the knowledge and awareness of ergonomics, this will lead in increasing of productivity, safety and health employees in organizations.

The increasing interest in ergonomics can be attributed to a number of factors. The most obvious is the rising cost associated with work related injuries and illnesses. The move towards legal regulation in Europe and North America, pressure from labour unions and insurers lead increasing employee awareness and the evidence that ergonomics programs can positively affect quality and productivity combine to make ergonomics an important issue Rowan 7 Wright, 1994). Hence the following hypothesis is offered:

H1 : There is a significant relation between job performance and factors that contribute to the existing of ergonomics program.

b. Job Performance with Ergonomics Practices in Video Display Terminal (VDT)

Computer usually known as Visual Display Terminal (VDT) is a medium in which the users and computer interact (King & Chiuan, 2000). VDT has become ubiquitous in the workplace and their use is increasing. The usage of VDT in Malaysia has been drastically since 1996, which correlates to the estimated amount of 4 million personal computers being installed in 2003 (America University, 2005). However, along with the increased use of VDT, there have been reports about the health effects largely related to the musculoskeletal disorders (MSD) such as visual discomfort and other stress related disorders. (Anderson *et. al.*, 1997 & Dahalan *et. al.,* 2003).

Malaysia National Institute Occupational Safety and Health (NIOSH) stated that the Visual Display Terminal (VDT) user is one of the group employees that are exposed to the mental health diseases. The mental health diseases refer to the mental disturbances such as stress, fatigue, anger, depressed, unsatisfactory work and others. Consequently, the productivity of the employees will decrease their emotional will unstable and thus reduced their safety and health (Mustafa, Kamaruddin, Othman & Mokhtar, 2009). Carlopio (1996) found

that employees' satisfaction with their work environment is directly related to their job satisfaction and indirectly related to organizational commitment and turnover intention. Hence the following hypothesis is offered:

H2 : There is a significant relation between job performance and ergonomics practices in Video Display Terminal (VDT).

c. Job Performance with Ergonomics Practices in Workspace Design

Ergonomics deals with a system of interacting components which includes the employees, the work environment both physical and organizational, the task and the workspace. The goal of ergonomics is to ensure a good fit between the employees and their job, thereby maximizing worker comfort, safety, productivity and efficiency (Wright & Rowan, 1994).

Attaran and Warge 1999 investigated that poor design workplaces result in low productivity and quality. Highly skilled technology workers require effective, well designed workstation, tools and information to be efficient and productive. Employees that feel better will work better and a higher level of comfort decreases and improves employee productivity.

In the process of designing a workstation, several factors especially ergonomics factors must be taken into consideration (Yeow & Sen, 2003; Khan *et. al.*, 2005). The failure to implement the ergonomics principles at the workplaces can lead to emotional depression, physical exhaustive, productivity and products quality declining (Shikdar & Sawaqed, 2003). The previous researchers found out that when the workstation is perceived as causing stress, it would bring about somatic complaints, job dissatisfaction and attention to quit (Makhbur & Idrus, 2009). Hence the following hypothesis is offered:

H3 : There is a significant relation between job performance and ergonomics practices in workspace design.

d. Job Performance with Ergonomics Practices in Office Equipment

Ergonomics is defined as the design of the workplace, equipment, machine, tool, product, environment and system. Taking into consideration the human's physical, physiological, biochemical and psychological capabilities and optimizing the effectiveness and productivity of work systems while assuring the safety, health and wellbeing of the employees. In general, the aim in ergonomics is to fit the task to the individual, not the individual to the task (Fernandez, 1995). Many US companies have already capitalized on the advantages ergonomics provides. They have achieved large cost reduction, improved quality, reduced

injury rates and improved equipment and work sites. Hence the following hypothesis is offered:

H4 : There is a significant relation between job performance and ergonomics practices in office equipment.

e. Job Performance with Level Awareness of Office Ergonomics Practices

The level of ergonomics awareness in Malaysia manufacturing industries is still in moderate level. Lack information, knowledge and training about ergonomics are the main factors that obstruct the organization in implementing ergonomics programs. The result in case study shows that application ergonomics Tool factor will give major influence to respondent mental and health in giving them satisfaction in work, increase performance, safety and health (Mustafa; Kamaruddin; Othman & Mokhtar, 2009). Hence the following hypothesis is offered:

H5 : There is a significant relation between job performance and level awareness of office ergonomics practices.

3.3 Research Design

A research design is a master plan specifying the methods and procedures for collecting and analyzing the information. The design is to ensure that all information gathered is appropriate for solving the problem (Zikmund, 2003).

The purpose of this study is to identify the relationship between office ergonomics practices and job performance. This is a correlational study because it involves independent variables namely factors such as factors that contribute to the existing of ergonomics program, ergonomics practices in Video Display Terminal (VDT), ergonomics practices in workspace design, ergonomics practices in office equipment and level awareness of office ergonomics practices. These independent variables may or may not contribute to a job performance. In this study also, the researcher will use research question to examine the independent variables and dependents variable.

3.4 Measurement and Instruments

According to Ghazali (2004) summarized that there are few of research method that can be used to collect data such as: survey (ask), observation (look), experiments (laboratory) and documents (researching data through documents).

Therefore, in this study, the researcher will use survey method by asking question through questionnaire. According to Bell (1997) the aims of a survey is to obtain information which can be analyzed and patterns extracted and comparison made. All respondents will be asked the same questions in, as far as possible, the same circumstances.

3.5 Data Collection Method

A proper sampling design and size helps the researcher to draw conclusions that would be generalized to the population of interest. This study is conducted at library UiTM Shah Alam, Selangor. The Bahasa Melayu translated version questionnaires were distributed as the pool of respondent occupations ranges from support staff until professional and management staff. Data were gathered from all level of categories and each employee's response is treated as an entire data source. The total population is about 267 of all personnel in various departments.

Based on Krejcie and Morgan's (1970) table for determining sample size, for a given population of 267, a sample size of at least 152 would be needed to represent a cross section of the population. The selection of the sample from the set of population is through random sampling. This method will give equal chance to every person in this population to be selected (Fraenkel & Wallen, 1993); so that the sample can represent the whole population in this respective library organization.

For the study, about 152 questionnaires were distributed to all the staff at library UiTM Shah Alam, Selangor and successfully collected 140 respondents to the questionnaires.

3.6 Variables and Measures

The questionnaire is one of the main tools for collecting data from the respondents. The types and designs of questionnaire that were used depend on the studies that had been carried out. In this study the questionnaire is a seven-page questionnaire which is divided into five sections respectively for example Section A, Section B, Section C, Section D and Section E. All sections in the questionnaire are conducted in Bahasa Melayu.

3.6.1 Questionnaire Design

a. Section A - Demographic Information.

The first section of the questionnaire requires information about personal and demographic data of respondents. Questions covering gender, age, computer application at workplace, ergonomics training, daily number of hours spend on the computer at workplace, rate on computer workstation and duration use keyboard.

b. Section B - Statements Pertaining to Factors that Contribute to the Existing of Ergonomics Program

The five-point scale is used to measure the level of job performance as shown in Table 3.1. In order to answer the questionnaire, respondents have to select their choice of answer based on the five-point scale according to their opinion on each question. Each answer will be given a score. It is easier for the respondents to understand the format and produce more accurate answers.

Table 3.1

Measurement the level of job performance

Five-Point Scale	Choices Score
Strongly disagree	1
Disagree	2
Uncertain	3
Agree	4
Strongly Agree	5

c. Section C - Types of Ergonomics Practices in this Organization

The respondent rated ergonomics practices in Video Display Terminal (VDT), workspace design and office equipment with each item on a five-point Likert scale (interval scale) ranging from 1 (Strongly disagree), 2 (Disagree), 3 (Uncertain), 4 (Agree), 5 (Strongly Agree).

d. Section D - Awareness of Office Ergonomics Practices

The respondent rated their level of awareness with each item on a five-point Likert scale (interval scale) ranging from 1 (Strongly disagree), 2 (Disagree), 3 (Uncertain), 4 (Agree), 5 (Strongly Agree).

e. Section E - Job Performance

The respondent rated their level of productivity with each item on a five-point Likert scale (interval scale) ranging from 1 (Strongly disagree), 2 (Disagree), 3 (Uncertain), 4 (Agree), 5 (Strongly Agree).

The data gathered was analyzed using The Statistical Package for Social Sciences (SPSS) version 12.0 for statistical analysis. All the items and variables were coded before entered to the computer. In this study, the responses and information collected from the survey was tested using statistical techniques such as reliability test, frequency analysis, Cronbach's Alpha Coefficients, Pearson Correlation, and Multiple Regression analysis.

3.7 Pilot Test

The purpose was to ensure the respondents could understand the instrument given and as well as to determine the time taken to complete the questionnaire. By doing a pilot study the feasibility of the study was investigated (the validity of the measuring tools and the acceptability of the study to the study population) so that potential problems could be identified and resolved before commencing the

study. The information gained was used to improve the methods or instrument where applicable. The pilot study was conducted on a small group of people.

The findings of the pilot study assisted the investigators in the removal of questions that were considered to be vague or unclear to the participants. The researcher will know whether the questionnaire is fully understood by the respondents. Reliability is the degree to which measures are free from random error and therefore yield consistent result. The questionnaires were personally given to the respective personnel in the library UiTM Shah Alam, Selangor. The pilot study was facilitated of 30 respondents from library at UiTM Shah Alam, Selangor. Time taken to complete the questionnaire ranged from 30-45 minutes. Feedback on clarity of words and instructions were positive with minimal changes needed. The respondents were able to understand all questions with little difficulty.

The reliability of the questionnaire was tested by using Cronbach's Alpha or called Alpha Coefficient to show the internal consistency of the questionnaire. According to Sekaran (2003), the closer the reliability coefficient to 1.00 is the better. In general, the acceptable alpha coefficient should be more than 0.7.

In this study, four independent variables and dependent variable met the above requirement. While reliabilities for ergonomics practices in office equipment are considered moderate. The alpha value for factors that contribute to the existing

of ergonomics program is 0.905, ergonomics practices in Video Display Terminal (VDT) is 0.767, ergonomics practices in workspace design is 0.847, ergonomics practices in office equipment is 0.678 and level awareness of office ergonomics practices is 0.893. Meanwhile, the alpha value of job performance is 0.875. This is summarized in Table 3.2 below.

Table 3.2

Alpha coefficient for each section

Section	No. of Items	Alpha Value
Factors that Contributes to the Existing of Ergonomics Program	10	0.905
Ergonomics Practices in Video Display	6	0.767
Ergonomics Practices in Workspace Design	6	0.847
Ergonomics Practices in Office Equipment	4	0.678
Level of Awareness of Ergonomics Practices	6	0.875
Job performance	5	0.917

3.8 Data Collection

The questionnaire is used as the main tool to collect data from the respondents. The advantage of using questionnaire includes the relatively low cost and the facts of anonymity among respondents that will lead to more open and truthful responses (Schermerhorn, 2000).

Researcher distributed questionnaires to the target respondents of all departments at library in UiTM Shah Alam, Selangor. The questionnaires then were collected through the Human Resource Department. Approximately 260 sets of questionnaire were prepared for distribution. The questionnaires were distributed to all targeted site staff on 2 Disember 2010, approximately 140 sets of questionnaire were collected back progressively and personally with the help of HR representative. The respondents were given ample time (2 – 3 weeks) to answer the questionnaires.

3.9 Data Analysis

Data analysis is used and can help researcher to summarize the conclusion of the study. The data is analyzed by using 'Statistical Package for Social Science (SPSS Window) version 12.0. All items and variables were coded before entered to the computer in order to carry out factor analysis. The purpose of having factor analysis was to help researcher categorized the suitable items for each dimension of independent variables (human resource practices). The result obtained from factor analysis, a reliability test five independent variable as well as dependent variable was conducted. Additionally, the Cronbach's Alpha Coefficient will also compute to investigate the consistency and reliability of the instrument. On the other hand, the researcher has carried out the frequency analysis for the respondent's demographic factors such as gender, age,

application computer at workplace etc. Subsequently, Pearson Correlation Analysis was used to examine the relationship between independent variables office ergonomics practices and dependent variables job performance. Further to this, Multiple Regression Analysis will be done to determine the relationship between both variables.

3.9.1 Descriptive Statistics

Descriptive Statistics such as frequency and percentage are used to describe the respondent characteristics.

3.9.2 Inferential Statistics

(a) Pearson Correlation Coefficient

Pearson coefficient is used to show the degree of linear relationship between independent and dependents variables. The symbol of a correlation is *r,* and its range is from -1.00 to +1.00. A correlation coefficient tells two things about the relationship between two variables; the direction of the relationship and its magnitude. The closer the measure is to 1.00, the more likely the relationship is statistically significant (Muchinsky, 1993). The interpretation of the strength of correlation according to "Guilford Rule of Thumb" is shown in Table 3.3.

Table 3.3

Interpretation of strength of correlation coefficient

Value of Coefficient	Relation between Variables
0.00 – 0.30	Very low relationship
0.30 – 0.50	Low relationship
0.50 – 0.70	High relationship
0.50 – 1.00	Very high relationship

(b) Multiple Regressions

Multiple regressions are used to identify the dominant relationship among the five independent variables and demographic factors that have closer relation with job performance. These independent variables are considered dominant if the beta value is the largest among the significant factors.

3.10 Summary

This chapter has described the development of the research model for this study. The research methodology and the research design have been explained following, the hypothesis generation. Different statistical tests, such as, descriptive (mean and standard deviations), Pearson correlation, and multiple regression analysis are used to examine the relationship hypothesized.

CHAPTER 4

RESULTS AND FINDINGS

4.1 Introduction

This chapter will analyze the data findings of the study. All data were analyzed using statistical package for the social sciences (SPSS) version 12.0 for window to perform the statistical analysis. The data were examined with reliability analysis, descriptive analysis or sample background, correlation analysis and regression analysis. Frequency analysis was utilized for utilized for analyzing the respondents' demographic characteristics such as age, gender, race, academic qualification, department and length of services status.

The statistical method of Pearson correlation was used to determine the existence of any relationships between the independent variables and dependent variable. Additionally, multiple regression analysis was conducted to examine which among the five independents variables are the most important to explain job performance among employees at library UiTM Shah Alam, Selangor. This chapter also illustrates the reliability test made to the instruments.

4.2 Sample Characteristics

Simple random sampling was employed as it could guarantee equal chances of population to be included in the sample (Zikmund, 2003). Out of 152 questionnaires issued, only 140 questionnaires were returned and cleared for further examination. Percentage rate of returned samples was 92% of total questionnaires distributed as shown in Table 4.1.

Table 4.1

Response rate

	Total	**Percentage**
Questionnaires distributed	152	100
Collected questionnaires	140	92
Usable questionnaires	140	92
Discarded questionnaires	-	-
Uncollected questionnaires	12	8

4.3 Profile of the Respondent

The frequency and percentage values were used to describe these particular demographic samples. The survey demonstrated the details concerning demographic variables or respondents' profile as shown in Table 4.2 below.

Table 4.2

Frequency demographic variables (n = 140)

	Categories	Percentage
1. Gender	Male	69.7
	Female	30.3
2. Age	Less than 25 years	41.4
	25 to 30 years	18.6
	30 to 35 years	16.4
	36 to 40 years	5.7
	41 to 45 years	6.4
	46 to 50 years	7.1
	More than 50 years	4.3
3. Computer Application at Workplace		
a. Word Processing	Yes	75.4
	No	23.6
b. Surfing the Web	Yes	79.3
	No	20.7
c. Database & Spreadsheet	Yes	75.7
	No	24.3
d. Graphics & Design	Yes	32.1
	No	67.9
e. Email	Yes	85.0
	No	15.0
f. Calendar & Scheduling	Yes	47.1
	No	52.9
g. Others	Yes	5.7
	No	94.3
4. Ergonomics Training	Yes	38.6
	No	61.4
5. Daily No. of Hours Spend on Computer at Workplace	0 to 2 hours	7.1
	3 to 5 hours	18.6
	6 to 8 hours	60.7
	More than 8 hours	13.6
6. Rate on Computer Workstation	Poor	2.9
	Fair	32.1
	Good	60.0
	Excellent	5.0
7. Duration doing keyboard	Less than 5 years	22.9
	5 to 10 years	47.9
	More than 10 years	28.6

Table 4.2 shown the respondent's gender, age, computer application at workplace, ergonomics training, daily number of hours spend on the computer at workplace, rate on computer workstation and duration use keyboard of the respondents. Out of 140 respondents, about 72 (51.4%) are female and the rest are male which represent 68 (48.6%). The greatest numbers of the respondents are below 25 years (41.4%) age grouped followed by respondents aged 25 - 30 years (18.6%), 31 - 35 (16.4%), 40 - 50 (7.1%), 41- 45 (6.4%), 36 - 40 (5.7%) and 4.3% of them are above 50 years old.

Majority of the respondents used computer at workplace for email which represent 85% that about 119 out of 140 respondents, surfing the web 111 (79.3%) respondents, word processing 107 (76.4%) respondents, database and spreadsheet 106 (75.7%) respondents, calendar and scheduling 66 (47.1%) respondents, graphics and design 45 (32.1%) respondents and the remaining is 8 (5.7%) respondents for others. It shows that 86 (61.4%) respondents from the total respondents had received ergonomics training while they working with current or previous employer. Meanwhile, 54 (38.6%) respondents didn't receive any ergonomics training.

It shows that a total of 60.7% respondents had spent about 6 - 8 hours on the computer at workplace each day followed by 3 - 5 hours (18.6%), more than 8 hours (13.6%) and 0 - 2 hours (7.1%). There are 84 (60.0%) respondents agreed that their computer workstation is good followed by the 45 (32.1%) of the

respondents answered fair, excellent 7 (5%) respondents and poor 4 (2.9%) respondents. 67 (47.9%) respondents had been doing keyboarding between 5 - 10 years followed by 40 (28.6%) respondents more than 10 years and 32 (22.9%) respondents below than 5 years.

4.4 Goodness of Measure

4.4.1 Reliability Test

Before proceeding with the analysis proper, this study first tested the reliability of the instruments used. The reliability test concerned with the stability and consistency measurement to access the goodness of a measure. It will answer the questions on how consistently it measures a particular concept. The Cronbach's alpha values of each variable are illustrated in Table 4.3 below.

Table 4.3

Instrument reliabilities

Variables	No. of Items	Items Dropped	Cronbach's Alpha
Dependent Variable			
Job Performance	5	-	.917
Independent Variables			
Factors that Contribute to the Existing of Ergonomics Program	10	-	.917
Ergonomics Practices in Video Display Terminal (VDT)	6	-	.772
Ergonomics Practices in Workspace Design	6	-	.847
Ergonomics Practices in Office Equipment	4	-	.885
Level Awareness of Office Ergonomics Practices	13	-	.891

The above table shows that the Cronbach's alpha values for both dependent variable and independent variables are considered high. According to Sekaran (1992), reliabilities with less than 0.60 are deemed poor while those in the range of 0.70 ranges are acceptable and those above 0.80 are considered good. In the present study, all the alphas for variables are considered good.

4.5 Descriptive Analysis

Descriptive analysis which includes the mean, standard deviation, minimum and maximum for the independent and dependent variables are attained and recorded in Table 4.4.

Table 4.4

Descriptive analysis for major variables (n =140)

Variables	Mean	Std. Dev.	Min.	Max.
Factors that Contribute to the Existing of Ergonomics Program	4.09	.476	2.50	5.00
Ergonomics Practices in Video Display Terminal (VDT)	4.02	.487	2.50	5,00
Ergonomics Practices in Workspace Design	3.79	.603	1.67	5.00
Ergonomics Practices in Office Equipment	3.83	.731	1.00	5.00
Level Awareness of Office Ergonomics Practices	4.06	.422	2.62	5.00
Job Performance	4.27	.487	2.60	5.00

Table 4.4 above gives details on the overall summary of the descriptive statistical analysis for all the five independent variables and the job performance as the dependent variables. The mean rating for factors that contributes to the existing of ergonomics program variables are *M = 4.09 SD = .476* with minimum value of 2.50 and maximum value of 5.00. Ergonomics practices in Video Display Terminal (VDT) variables' mean rating are *M =4.02 SD = .487* with minimum

value of 2.50 and maximum value of 5.00. Ergonomics practices in workspace design variables' mean rating are *M =3.79 SD = .603* with minimum value of 1.67 and maximum value of 5.00. Ergonomics practices in office equipment variables' mean rating are *M =3.83 SD = .731* with minimum value of 1.00 and maximum value of 5.00. Level awareness of office ergonomics practices variables' mean rating are *M =4.06 SD = .422* with minimum value of 2.62 and maximum value of 5.00. Finally, the mean rating for job performance variables are *M =4.27 SD = .487* with minimum value of 2.60 and maximum value of 5.00.

4.6 Correlation Analysis

Table 4.5

Correlation coefficient among variables (n = 140)

	1	2	3	4	5	6
Factors that Contribute to Existing of Ergonomics Program (1)	-					
Ergonomics Practices in Video Display Terminal (VDT) (2)	.654**	-				
Ergonomics Practices in Workspace Design (3)	.296**	.472**	-			
Ergonomics Practices in Office Equipment (4)	.222**	.422**	.540**	-		
Level Awareness of Office Ergonomics Practices (5)	.741**	.595**	.320*	.227**	-	
Job Performance (6)	.643**	.451**	.148	.184*	.674**	-

*** Correlation is significant at p ≤ 0.0 l level (2-tailed).*
** Correlation is significant at p ≤ 0.05*

The Table 4.5 depicted the relationship between job performance as dependent with the five independent variables. The strongest linear relationship was found exist between job performance and level awareness of office ergonomics practices where r = .647. The positive correlation coefficient of .647 indicates that as the score of job performance so do the rating for level awareness of office ergonomics practices.

The second highest was found between job performance and factors that contribute to the existing of ergonomics program where r = .643 and the correlation coefficient indicates that was quite a strong positive relationship between both variables.

Next highest score was between job performance and ergonomics practices in Video Display Terminal (VDT) where r = .451. Relationship between job performance and ergonomics practices in office equipment also indicate a moderate positive linear coefficient where r = .184. Finally, the relationship between job performance and ergonomics practices in workspace design obtained the weakest correlation where r = .148.

4.7 Regression Analysis

Table 4.6

Results of regression analysis

	Dependent Variables Job Performance
Independent Variables	
Factors that Contributes to the Existing of Ergonomics Program	.447
Ergonomics Practices in Video Display Terminal (VDT)	-.091
Ergonomics Practices in Workspace Design	-.229
Ergonomics Practices in Office Equipment	.126
Level Awareness of Office Ergonomics Practices	.528
F value	51.899
R^2	.678
Adjusted R^2	.665

* $p<0.05$, ** $p < 0.01$

The Table 4.6 depicted the largest beta coefficient is 0.528 which for level awareness of office ergonomics practices. This carry the meaning of level awareness of office ergonomics practices variables make the strongest contribution to explaining the dependent variables (job performance). Based on beta values, the result shows that level awareness of office ergonomics practices has more effect on employees' job performance.

It suggest that one standard deviation increase in level awareness of office ergonomics practices is followed by 0.528 standard deviation increase in job performance.

The second highest beta value falls on the factors that contribute to existing of ergonomics program with 0.447 values and the third highest beta value is ergonomics practices in office equipment with 0.126. Finally, the beta value for ergonomics practices in workspace design is -0.229. These four independent variables are lower than the alpha value of 0.05 thus they are all significant value. The lowest beta values indicated that made the negative contributions to the job performance variance is ergonomics practices in Video Display Terminal (VDT), which is -0.091. This independent variable is higher than the alpha value of 0.05 thus it is no significant value.

The table above also gives details on the multiple regression coefficients (*R*) of the five independents variables to the job performance as dependent variable. The *R-square* is 0.678. The value of *F* is *51.899* at (p =.000). This means that 67.8% of the variance in job performance has been significantly explained by the five independent variables.

4.8 Summary

This chapter had presented the finding analysis of this current study. Data was analyzed using SPSS version 12.0 for Windows and captured the most applicable method of analyzing data including reliability test, descriptive statistic test, correlation test and regression test.

The conclusion and recommendations for future studies will be mentioned in the next chapter.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

5.1 Introduction

In this final chapter, all research objectives and the discussion of the findings are summarized. The results of correlation, regression analysis, pertaining to each of the seven research hypotheses that were tested in previous chapter are examined to provide detailed explanation based on the analysis of the research data. Finally administrative and managerial implications, limitations of the study and directions for further future research are presented.

5.2 Recapitulation of Result

As mentioned in Chapter 4, 67.8% of the variance in the job performance was explained by all the independent variables, i.e factors that contribute to the existing of ergonomics program, ergonomics practices in Video Display Terminal (VDT), ergonomics practices in workspace design, ergonomics practices in office equipment and level awareness of office ergonomics practices. Level awareness of office ergonomics practices has the largest beta coefficient (0.528), which is the strongest contribution to explaining the job performance variable.

The factors that contribute to the existing of ergonomics program obtained 0.447 to be the second highest beta value and the third beta value is ergonomics practices in office equipment with 0.126. Finally, the beta value for ergonomics practices in workspace design is -0.229. These four independent variables are lower than the alpha value of 0.05 thus they are all significant value. The lowest beta values indicated that made the negative contributions to the job performance variance is ergonomics practices in Video Display Terminal (VDT), which is -0.091. This independent variable is higher than the alpha value of 0.05 thus it is no significant value.

5.3 Discussion

The relationship between job performance and factors that contribute to the existing of ergonomics program, ergonomics practices in Video Display Terminal (VDT), ergonomics practices in workspace design, ergonomics practices in office equipment and level awareness of office ergonomics practices was investigated using Pearson's correlation coefficients. With reference to correlation table in Chapter 4, the table had explained the relationship between job performance and the five independent variables.

The relationship between job performance and level awareness of office ergonomics practices were the highest score where r = .674. The second

highest was found between job performance and factors that contribute to the existing of ergonomics program where r = .643. Next highest score was between job performance and ergonomics practices in Video Display Terminal (VDT) where r = .451. Relationship between job performance and ergonomics practices in office equipment also indicate a moderate positive linear coefficient where r = .184. Finally, the relationship between job performance and ergonomics practices in workspace design obtained the weakest correlation where r = .148.

The result show that when level awareness of office ergonomics practices is high when companies are realizing that making ergonomics changes before major work-related injuries occur is cost effective when compared with making ergonomics changes after major work related injuries occur. Applying ergonomics practices can help to reduce the risk of injuries or illnesses for those who work with computers, in laboratories, in jobs that require repetitive activities or in heavy materials handling.

The second highest linear correlation explained; employee show high job performance towards factors that contribute to the existing of ergonomics program provided by the company. Employees seen that ergonomics has a lot offer in improving working practices and the health and safety of employees. Additionally, the process of job change through the introduction of ergonomics

practices has been shown to lead both to improved job content and job satisfaction.

The third highest correlation indicates that the employees' who perceived ergonomics practices in Video Display Terminal (VDT) due to the advancement of computer use, most of the manual driven activities in technical services are now replaced by human input in computes. They provide efficiency, competitive advantages and the ability to carry out work that would be impossible or less effective without it.

Similarly, this perception describes the other positive correlation. The employee's perceptions towards ergonomic practices in office equipment have significant effects on the performance of the employees. The application of ergonomics practice in office equipment could improve productivity, quality and safety performance of the organization.

The ergonomics practices in workspace design obtained the weakest correlation, indicating that workspace design could influence the stress outcomes at the workplace. Makhbul and Idrus (2009) found that when workstation is perceived as causing stress, it would bring about somatic complaints, job dissatisfaction and intention to quit. Employees that familiar with their workspace design will experiences difficulty, inefficient and unproductive with new workspace design especially to employee that working at library.

5.4 Implications

This study can provide the management understanding on importance of office ergonomics practices that could affect the employees' job performance in the context of library in which eventually attempting to enhance organization performance to non-profit organization.

The result of the study could be the determinants towards making more reliable decisions on safety awareness programs and implementation of such programs to particular employees by the top management and safety officer.

Furthermore the result and findings of this study may contribute to the additional literature and to the body of knowledge for future improvements and development especially in the area of the office ergonomics practices among librarians in university setting in Malaysia.

5.5 Limitation of Study

This study is conducted only among staff at library UiTM Shah Alam, Selangor where the population of staff is a small number, thus this study representing a case that happens in a lower scale.

Although this field has received great focus from oversea researchers, but it revolves a lot to the corporate sector and still lacking research carried out in field of library especially in the university.

This research carried out in Bahasa Melayu-speaking context, produced some interesting results and corroborated many studies in the field; some of its limits must nevertheless be mentioned. The researcher realizes that there are some limitations and constraints in this investigation. Firstly, the study used self report measures to gather data on employee job performance on the office ergonomics practices. As such, this is an issue because some of the participants might not be willing to truthfully admit that they satisfied with the office ergonomics practices at work. While admitting to job performance may be difficult enough, participants might lack of knowledge in overall office ergonomics practices. Second, we used single items to measure several variables. This may have influenced the reliability of those variables.

5.6 Recommendation for Future Research

It is suggested to study other variable of job performance i.e safety and health, employee's turnover, job satisfaction, injuries and accidents. It is recommended to examine other variables of job performance beside the five variables that has

been identified. By having knowledge of the job performance, the management can review the policy and implement it within the company.

The future study should use interview method to collect data. Thus from the interview the researcher can obtain more feedback and information about areas that are not stated in the questionnaire. The interviews could be unstructured interviews and it is recommended to have face to face interviewing. The main purpose of the unstructured interview is to explore problem in to the several factors in the situation that might be central the problem. This will help to identify the critical problem as well as to solve it.

Finally, it is proposed that the study is to be conducted throughout the whole UiTM system, including all branches, all satellite offices and the Headquarter to have an overall analysis and findings which represents office ergonomics

5.7 Conclusion

This study found that office ergonomics practices that consists of factors such factors that contribute to the existing of ergonomics program, ergonomics practices in Video Display Terminal (VDT), ergonomics practices in workspace design, ergonomics practices in office equipment and level awareness of office

ergonomics practices have a correlation with the employees' job performance among UiTM Shah Alam librarians.

The finding of this study confirms that perhaps the most practically important and novel theoretical contribution of this study is the examination of the office ergonomics practices has a relationship between employees' job performance. First, a positive factors that contribute to existing of ergonomics program was directly related to job performance. Second, there was negative relationship between ergonomics practices in Video Display Terminal (VDT) with job performance and followed by negative relationship between ergonomics practices in workspace design with job performance. There was positive relationship between ergonomics practices in office equipment with job performance. Finally, there was also positive relationship between level awareness of office ergonomics practices with job performance.

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APPENDIX A

UNIVERSITI UTARA MALAYSIA

Tajuk Penyelidikan : "Hubungan Antara Amalan Ergonomik Pejabat Dan Prestasi Kerja Staf Perpustakaan di UiTM Shah Alam, Selangor"

Tuan/Puan/Cik yang dihormati,

Tujuan penyelidikan adalah untuk mengkaji hubungan di antara amalan ergonomik pejabat dan prestasi kerja di dalam organisasi. Kajian ini adalah untuk memenuhi syarat pengijazahan Sarjana Pengurusan Sumber Manusia (MHRM).

Soalan kajiselidik ini dibahagi kepada lima (5) bahagian. Bahagian A adalah berkenaan maklumat peribadi responden. Bahagian B adalah berkenaan faktor-faktor yang menyumbang kepada pengwujudan program ergonomik, Bahagian C adalah berkenaan jenis-jenis amalan ergonomik di dalam organisasi sedia ada, Bahagian D adalah berkenaan tahap kesedaran amalan ergonomik di pejabat dan Bahagian E adalah berkenaan prestasi kerja. Sila baca soalan dengan teliti sebelum anda menjawabnya. Saya berharap anda dapat menjawab soalan kaji selidik ini sejujur yang mungkin. Tiada jawapan yang betul atau salah. Untuk makluman anda, semua jawapan akan dijaga kerahsiaannya. Data yang diperolehi akan digunakan bagi tujuan akademik sahaja.

Terima kasih kerana meluangkan masa Tuan/Puan/Cik menjawab soalan kaji selidik ini dan kerjasama anda amat dihargai. Sila hubungi saya di talian 012-3246755 sekiranya tuan/puan/cik memerlukan maklumat lanjut.

Yang benar

SALINA IBRAHIM
Sarjana Pengurusan Sumber Manusia
University Utara Malaysia

BAHAGIAN A

DEMOGRAFI RESPONDEN

ARAHAN : Seksyen ini mengandungi maklumat berkenaan latarbelakang responden. Sila tandakan (/) di dalam kotak yang sesuai.

1. Jantina

☐ Male ☐ Perempuan

2. Umur

☐ Bawah 25 tahun ☐ 25 - 30 tahun

☐ 31 - 35 tahun ☐ 36 - 40 tahun

☐ 41 - 45 tahun ☐ 46 - 50 tahun

☐ 50 tahun dan ke atas

3. Saya menggunakan komputer di tempat kerja untuk? (Tandakan semua yang berkaitan)

☐ Pemprosesan Perkataan ☐ Melayari web

☐ Pangkalan Data dan Sebaran Lembaran ☐ Grafik dan reka bentuk

☐ Emel ☐ Kalender dan penjadualan

☐ Lain-lain. Sila nyatakan .....

.....

4. Pernahkah anda menerima latihan berkaitan ergonomik semasa bekerja dengan majikan sekarang atau majikan terdahulu anda?

☐ Ya ☐ Tidak

5. Jumlah jam anda berada di depan komputer di pejabat anda setiap hari :

☐ 0 - 2 jam

☐ 3 - 5 jam

☐ 6 - 8 jam

☐ Melebihi 8 jam (Sila nyatakan)

6. Bagaimana anda menilai ruang kerja komputer anda?

☐ Kurang baik

☐ Sederhana

☐ Baik

☐ Cemerlang

7. Sudah berapa lama anda menggunakan papan kekunci (termasuk penggunaan komputer, mesin taip dan lain-lain sebelum ini)?

☐ Kurang daripada 5 tahun

☐ 5 - 10 tahun

☐ Lebih daripada 10 tahun

BAHAGIAN B

FAKTOR-FAKTOR YANG MENYUMBANG KEPADA PENGWUJUDAN PROGRAM ERGONOMIK

ARAHAN: Berikut adalah lima (5) kenyataan yang mana anda mungkin bersetuju atau tidak bersetuju. Menggunakan skala 1-5 di bawah, sila bulatkan satu nilai skala yang menyatakan persetujuan anda terhadap kenyataan yang diutarakan. Sila jawab dengan jujur dan terbuka. Skala 5-point adalah seperti berikut:

1	2	3	4	5
Sangat tidak bersetuju	**Tidak bersetuju**	**Tidak pasti**	**Bersetuju**	**Amat bersetuju**

1.	Ergonomik adalah amat penting dalam memastikan satu persekitaran tempat kerja yang sihat.	1	2	3	4	5
2.	Organisasi boleh mengurangkan perbelanjaan perubatan dengan mempraktis amalan-amalan ergonomik.	1	2	3	4	5
3.	Penubuhan OSHA dan NIOSH merupakan satu faktor yang menyumbang kepada kewujudan program ergonomik di dalam organisasi ini.	1	2	3	4	5
4.	Keperluan perundangan Malaysia iaitu Akta Keselamatan Pekerjaan dan Keselamatan 1954, merintis pengwujudan program ergonomik di dalam organisasi ini.	1	2	3	4	5
5.	Perubahan teknologi sebagai contoh, penggunaan komputer, menyumbang kepada kewujudan program ergonomik di dalam organisasi ini.	1	2	3	4	5
6.	Ergonomik digunakan bagi mengelak kecederaan atau kemalangan di tempat kerja.	1	2	3	4	5

7.	Gangguan Trauma Kumulatif (kecederaan yang sering berlaku di kawasan pergelangan tangan) disebabkan oleh penggunaan yang kurang sesuai di ruang kerja komputer merupakan penyumbang tertinggi kecederaan-kecederaan ergonomik.	1	2	3	4	5
8.	Aktiviti-aktiviti ergonomik direka bentuk untuk keselesaan para pekerja.	1	2	3	4	5
9.	Saya lebih tertarik bekerja di dalam organisasi yang menawarkan faedah-faedah berkaitan keselamatan seperti tuntutan perubatan.	1	2	3	4	5
10.	Saya seharusnya meminta diwujudkan amalan ergonomik di dalam organisasi saya.	1	2	3	4	5

BAHAGIAN C

JENIS-JENIS AMALAN ERGONOMIK DI DALAM ORGANISASI SEDIA ADA

ARAHAN: Berikut adalah lima (5) kenyataan yang mana anda mungkin bersetuju atau tidak bersetuju. Menggunakan skala 1-5 di bawah, sila bulatkan satu nilai skala yang menyatakan persetujuan anda terhadap kenyataan yang diutarakan. Sila jawab dengan jujur dan terbuka. Skala 5-point adalah seperti berikut:

1	2	3	4	5
Sangat tidak bersetuju	**Tidak bersetuju**	**Tidak pasti**	**Bersetuju**	**Amat bersetuju**

A. Terminal Paparan Video (VDT)

11.	Komputer monitor dan aras mata saya berada di paras yang sama supaya saya mudah melihat skrin tanpa perlu menggerakkan tengkuk atau kepala ke bawah dan ke atas..	1	2	3	4	5
12.	Jarak monitor komputer saya membenarkan saya untuk membaca paparan skrin monitor tanpa perlu saya menggerakkan kepala dan tengkuk ke hadapan atau ke belakang.	1	2	3	4	5
13.	Saya boleh melaras kecerahan dan ketinggian paparan skrin mengikut aras kecerdasan mata saya.	1	2	3	4	5
14.	Silau di monitor komputer saya perlu disingkirkan.	1	2	3	4	5
15.	Saya akan merasa lebih selesa menggunakan komputer sekiranya setiap ruang kerja dikhaskan kepada pengguna secara individu .	1	2	3	4	5
16.	Dengan menggunakan lapik tetikus di ruang kerja, saya dapat membantu mengurangkan kesakitan di pergelangan tangan.	1	2	3	4	5

B. Rekabentuk Ruang Kerja

17.	Saya merasakan ruang kerja yang diberikan mencukupi untuk saya melaksanakan tugas dengan mudah.	1	2	3	4	5
18.	Saya merasakan ruang kerja yang diberikan mencukupi untuk saya menjana tugas menggunakan peralatan yang disediakan.	1	2	3	4	5
19.	Ruang untuk percetakan di tempat kerja saya diletakkan berasingan daripada kawasan ruang kerja pekerja.	1	2	3	4	5
20.	Di tempat kerja saya, pekerja yang berkongsi proses kerja yang sama diletakkan bersebelahan antara satu sama lain.	1	2	3	4	5
21.	Telefon di ruang kerja saya diletakkan di tempat yang mudah dicapai.	1	2	3	4	5
22.	Saya berpuas hati dengan ruang kerja saya.	1	2	3	4	5

C. Peralatan Pejabat

23.	Kerusi saya selesa dan boleh laras.	1	2	3	4	5
24.	Kerusi-kerusi di dalam pejabat ini boleh dilaraskan mengikut kesesuaian setiap pengguna.	1	2	3	4	5
25.	Kerusi saya menyediakan sokongan belakang yang mencukupi.	1	2	3	4	5
26.	Meja di ruang kerja saya bersesuaian dengan tugasan yang sedang dilaksanakan.	1	2	3	4	5

BAHAGIAN D

TAHAP KESEDARAN AMALAN ERGONOMIK DI PEJABAT

ARAHAN: Berikut adalah lima (5) kenyataan yang mana anda mungkin bersetuju atau tidak bersetuju. Menggunakan skala 1-5 di bawah, sila bulatkan satu nilai skala yang menyatakan persetujuan anda terhadap kenyataan yang diutarakan. Sila jawab dengan jujur dan terbuka. Skala 5-point adalah seperti berikut:

1	2	3	4	5
Sangat tidak bersetuju	**Tidak bersetuju**	**Tidak pasti**	**Bersetuju**	**Amat bersetuju**

27.	Latihan ergonomik harus dihadiri oleh setiap pekerja sekurang-kurangnya sekali dalam tempoh perkhidmatan.	1	2	3	4	5
28.	Latihan ergonomik membantu para pekerja mengambil berat tentang kesejahteraan diri mereka sendiri.	1	2	3	4	5
29.	Prinsip-prinsip keselamatan seharusnya digabungkan di dalam program orientasi pekerja-pekerja baru.	1	2	3	4	5
30.	Latihan diadakan bagi memastikan pengetahuan dan kemahiran yang diajar diaplikasikan secara konsisten dan betul oleh setiap pekerja.	1	2	3	4	5
31.	Saya merasakan saya menerima latihan ergonomik yang secukupnya.	1	2	3	4	5
32.	Organisasi harus meminta setiap pekerja untuk melakukan saringan awal kesihatan sekurang-kurangnya dua kali setahun.	1	2	3	4	5

33.	Organisasi harus menjemput pegawai kesihatan sekurang-kurangnya dua kali setahun untuk memberi ceramah berkenaan penyakit yang boleh berlaku di tempat kerja.	1	2	3	4	5
34.	Sebelum membeli peralatan baru, Bahagian Fasiliti perlu melihat peralatan dari aspek keselamatan.	1	2	3	4	5
35.	Apabila mengatur semula ruang kerja, pengurusan sepatutnya sentiasa merujuk reka bentuk ergonomik.	1	2	3	4	5
36.	Amalan-amalan ergonomik harus dipraktiskan oleh pekerja-pekerja dan majikan di dalam sesebuah organisasi.	1	2	3	4	5
37.	Forum kesihatan dan keselamatan seharusnya dianjurkan oleh pihak pengurusan dan disertai oleh pekerja-pekerja sekurang-kurangnya empat kali setahun.	1	2	3	4	5
38.	Pihak pengurusan atasan harus menganggap amalan-amalan ergonomik penting di dalam organisasi ini.	1	2	3	4	5
39.	Kesatuan pekerja saya memberi sokongan penuh dalam program ergonomik yang dilaksanakan oleh pengurusan.	1	2	3	4	5

BAHAGIAN E

PRESTASI KERJA

ARAHAN: Berikut adalah lima (5) kenyataan yang mana anda mungkin bersetuju atau tidak bersetuju. Menggunakan skala 1-5 di bawah, sila bulatkan satu nilai skala yang menyatakan persetujuan anda terhadap kenyataan yang diutarakan. Sila jawab dengan jujur dan terbuka. Skala 5-point adalah seperti berikut:

1	2	3	4	5
Sangat tidak bersetuju	**Tidak bersetuju**	**Tidak pasti**	**Bersetuju**	**Amat bersetuju**

Produktiviti

40.	Persekitaran tempat kerja baik memberi impak besar terhadap produktiviti pekerja.	1	2	3	4	5
41.	Satu susunan ruang kerja yang sesuai mendorong pekerja menjana output kerja yang efektif.	1	2	3	4	5
42.	Reka bentuk ruang kerja yang terkini adalah penting untuk memastikan produktiviti para pekerja.	1	2	3	4	5
43.	Ruang kerja yang dipengaruhi oleh ergonomik yang sesuai boleh menambahkan produktiviti para pekerja.	1	2	3	4	5
44.	Perubahan reka bentuk sesuatu ruang kerja yang mengandungi alat-alat teknologi baru amat penting di dalam peningkatan produktiviti pekerja.	1	2	3	4	5

"Terima kasih kerana melengkapi soalan kaji selidik ini"

APPENDIX B

DEMOGRAPHIC VARIABLES

Frequencies – Demographic Variables

Statistics

		Gender	Age	Word Processing	Surfing Web	Database & Sheet	Graphics & Design	Email	Calendar & Sched.	Others	Ergonomics Training	No. of hours spend comp.	Comp. Wstation	Kboard
N	Valid	140	140	140	140	140	140	140	140	140	140	140	140	140
	Missing	0	0	0	0	0	0	0	0	0	0	0	0	0
Mean		1.51	2.56	1.24	1.21	1.24	1.68	1.15	1.53	1.94	1.61	2.81	2.67	2.07
Std. Deviation		.502	1.820	.426	.407	.430	.469	.358	.501	.233	.489	.758	.617	.736
Minimum		1	1	1	1	1	1	1	1	1	1	1	1	1
Maximum		2	7	2	2	2	2	2	2	2	2	4	4	4

Frequency Table

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	68	48.6	48.6	48.6
	Female	72	51.4	51.4	100.0
	Total	140	100.0	100.0	

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 25 years	58	41.4	41.4	41.4
	25 to 30 years	26	18.6	18.6	60.0
	31 to 35 years	23	16.4	16.4	76.4
	36 to 40 years	8	5.7	5.7	82.1
	41 to 45 years	9	6.4	6.4	88.6
	46 to 50 years	10	7.1	7.1	95.7
	More than 50 years	6	4.3	4.3	100.0
	Total	140	100.0	100.0	

Word Processing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	107	76.4	76.4	76.4
	No	33	23.6	23.6	100.0
	Total	140	100.0	100.0	

Surfing Web

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	111	79.3	79.3	79.3
	No	29	20.7	20.7	100.0
	Total	140	100.0	100.0	

Database & Sheet

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	106	75.7	75.7	75.7
	No	34	24.3	24.3	100.0
	Total	140	100.0	100.0	

Graphics & Design

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	yes	45	32.1	32.1	32.1
	No	95	67.9	67.9	100.0
	Total	140	100.0	100.0	

Email

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	119	85.0	85.0	85.0
	No	21	15.0	15.0	100.0
	Total	140	100.0	100.0	

Calendar & Sched.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	66	47.1	47.1	47.1
	No	74	52.9	52.9	100.0
	Total	140	100.0	100.0	

Others

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	8	5.7	5.7	5.7
	No	132	94.3	94.3	100.0
	Total	140	100.0	100.0	

Ergonomics Training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	54	38.6	38.6	38.6
	No	86	61.4	61.4	100.0
	Total	140	100.0	100.0	

No. of hours spend comp.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0 to 2 hours	10	7.1	7.1	7.1
	3 to 5 hours	26	18.6	18.6	25.7
	6 to 8 hours	85	60.7	60.7	86.4
	More than 8 hours	19	13.6	13.6	100.0
	Total	140	100.0	100.0	

Comp. Wstation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	4	2.9	2.9	2.9
	Fair	45	32.1	32.1	35.0
	Good	84	60.0	60.0	95.0
	Excellent	7	5.0	5.0	100.0
	Total	140	100.0	100.0	

Keyboarding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 5 years	32	22.9	22.9	22.9
	5 to 10 years	67	47.9	47.9	70.7
	More than 10 years	40	28.6	28.6	99.3
	4	1	.7	.7	100.0
	Total	140	100.0	100.0	

APPENDIX C

FREQUENCIES OF IV AND DV

Statistics

		Existing Ergonomic Program	Workspace Design	Office Equipment	Level of Awareness	Video Display Terminal	Job Performance
N	Valid	140	140	140	140	140	140
	Missing	0	0	0	0	0	0
Mean		4.0929	3.7940	3.8262	4.0632	4.0167	4.2671
Std. Deviation		.47629	.60262	.73152	.42226	.48696	.50699
Minimum		2.50	1.67	1.00	2.62	2.50	2.60
Maximum		5.00	5.00	5.00	5.00	5.00	5.00

Existing Ergonomic Program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.50	1	.7	.7	.7
	3.00	5	3.6	3.6	4.3
	3.10	3	2.1	2.1	6.4
	3.40	2	1.4	1.4	7.9
	3.50	1	.7	.7	8.6
	3.60	2	1.4	1.4	10.0
	3.70	6	4.3	4.3	14.3
	3.80	11	7.9	7.9	22.1
	3.90	8	5.7	5.7	27.9
	4.00	41	29.3	29.3	57.1
	4.10	7	5.0	5.0	62.1
	4.20	11	7.9	7.9	70.0
	4.30	9	6.4	6.4	76.4
	4.40	9	6.4	6.4	82.9
	4.50	1	.7	.7	83.6
	4.60	6	4.3	4.3	87.9
	4.80	3	2.1	2.1	90.0
	4.90	2	1.4	1.4	91.4
	5.00	12	8.6	8.6	100.0
	Total	140	100.0	100.0	

Video Display Terminal

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.50	1	.7	.7	.7
	2.83	1	.7	.7	1.4
	3.00	7	5.0	5.0	6.4
	3.17	1	.7	.7	7.1
	3.33	5	3.6	3.6	10.7
	3.50	4	2.9	2.9	13.6
	3.67	14	10.0	10.0	23.6
	3.83	14	10.0	10.0	33.6
	4.00	42	30.0	30.0	63.6
	4.17	11	7.9	7.9	71.4
	4.33	15	10.7	10.7	82.1
	4.50	9	6.4	6.4	88.6
	4.67	5	3.6	3.6	92.1
	4.83	3	2.1	2.1	94.3
	5.00	8	5.7	5.7	100.0
	Total	140	100.0	100.0	

Workspace Design

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.67	1	.7	.7	.7
	2.00	2	1.4	1.4	2.1
	2.33	3	2.1	2.1	4.3
	2.50	1	.7	.7	5.0
	2.67	1	.7	.7	5.7
	2.83	3	2.1	2.1	7.9
	3.00	8	5.7	5.7	13.6
	3.17	4	2.9	2.9	16.4
	3.33	7	5.0	5.0	21.4
	3.50	7	5.0	5.0	26.4
	3.67	7	5.0	5.0	31.4
	3.83	18	12.9	12.9	44.3
	4.00	52	37.1	37.1	81.4
	4.17	6	4.3	4.3	85.7
	4.33	6	4.3	4.3	90.0
	4.50	5	3.6	3.6	93.6
	4.67	1	.7	.7	94.3
	4.83	3	2.1	2.1	96.4
	5.00	5	3.6	3.6	100.0
	Total	140	100.0	100.0	

Office Equipment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00	1	.7	.7	.7
	1.50	2	1.4	1.4	2.1
	1.75	1	.7	.7	2.9
	2.00	1	.7	.7	3.6
	2.25	2	1.4	1.4	5.0
	2.50	4	2.9	2.9	7.9
	2.75	1	.7	.7	8.6
	3.00	6	4.3	4.3	12.9
	3.25	8	5.7	5.7	18.6
	3.50	10	7.1	7.1	25.7
	3.67	1	.7	.7	26.4
	3.75	16	11.4	11.4	37.9
	4.00	59	42.1	42.1	80.0
	4.25	8	5.7	5.7	85.7
	4.50	2	1.4	1.4	87.1
	4.75	4	2.9	2.9	90.0
	5.00	14	10.0	10.0	100.0
	Total	140	100.0	100.0	

Level of Awareness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.62	1	.7	.7	.7
	3.00	4	2.9	2.9	3.6
	3.08	1	.7	.7	4.3
	3.15	1	.7	.7	5.0
	3.38	2	1.4	1.4	6.4
	3.46	1	.7	.7	7.1
	3.54	2	1.4	1.4	8.6
	3.62	3	2.1	2.1	10.7
	3.69	2	1.4	1.4	12.1
	3.77	6	4.3	4.3	16.4
	3.85	9	6.4	6.4	22.9
	3.92	11	7.9	7.9	30.7
	4.00	44	31.4	31.4	62.1
	4.08	7	5.0	5.0	67.1
	4.15	5	3.6	3.6	70.7
	4.23	6	4.3	4.3	75.0
	4.31	2	1.4	1.4	76.4
	4.38	5	3.6	3.6	80.0
	4.46	7	5.0	5.0	85.0
	4.54	5	3.6	3.6	88.6
	4.62	4	2.9	2.9	91.4
	4.69	3	2.1	2.1	93.6
	4.85	3	2.1	2.1	95.7
	4.92	2	1.4	1.4	97.1
	5.00	4	2.9	2.9	100.0
	Total	140	100.0	100.0	

Job Performance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	2.60	1	.7	.7	.7
	3.00	2	1.4	1.4	2.1
	3.20	1	.7	.7	2.9
	3.40	1	.7	.7	3.6
	3.60	7	5.0	5.0	8.6
	3.80	3	2.1	2.1	10.7
	4.00	61	43.6	43.6	54.3
	4.20	15	10.7	10.7	65.0
	4.40	4	2.9	2.9	67.9
	4.60	6	4.3	4.3	72.1
	4.80	8	5.7	5.7	77.9
	5.00	31	22.1	22.1	100.0
	Total	140	100.0	100.0	

APPENDIX D

RELIABILITY

1. Factors that Contribute to the Existing of Ergonomics Program

Case Processing Summary

		N	%
Cases	Valid	140	100.0
	Excluded[a]	0	.0
	Total	140	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.917	10

Item Statistics

	Mean	Std. Deviation	N
Exist Ergon. Prog	4.34	.642	140
Exist Ergon. Prog	4.15	.667	140
Exist Ergon. Prog	3.98	.662	140
Exist Ergon. Prog	4.01	.611	140
Exist Ergon. Prog	4.01	.623	140
Exist Ergon. Prog	4.11	.532	140
Exist Ergon. Prog	3.93	.653	140
Exist Ergon. Prog	4.14	.602	140
Exist Ergon. Prog	4.11	.700	140
Exist Ergon. Prog	4.15	.587	140

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Exist Ergon. Prog	36.59	18.732	.638	.912
Exist Ergon. Prog	36.78	18.519	.648	.911
Exist Ergon. Prog	36.95	18.336	.690	.909
Exist Ergon. Prog	36.91	18.295	.768	.904
Exist Ergon. Prog	36.91	18.352	.739	.906
Exist Ergon. Prog	36.82	19.169	.693	.909
Exist Ergon. Prog	37.00	19.252	.525	.918
Exist Ergon. Prog	36.79	18.137	.816	.902
Exist Ergon. Prog	36.81	17.922	.721	.907
Exist Ergon. Prog	36.78	18.735	.710	.908

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
40.93	22.686	4.763	10

2. Ergonomics Practices in Video Display Terminal (VDT)

Case Processing Summary

		N	%
Cases	Valid	140	100.0
	Excluded[a]	0	.0
	Total	140	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.772	6

Item Statistics

	Mean	Std. Deviation	N
Video Display Terminal	3.95	.808	140
Video Display Terminal	3.96	.661	140
Video Display Terminal	4.05	.592	140
Video Display Terminal	3.93	.746	140
Video Display Terminal	4.19	.652	140
Video Display Terminal	4.02	.791	140

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Video Display Terminal	20.15	5.596	.599	.715
Video Display Terminal	20.14	6.190	.580	.723
Video Display Terminal	20.05	6.192	.678	.706
Video Display Terminal	20.17	6.733	.322	.788
Video Display Terminal	19.91	5.949	.679	.699
Video Display Terminal	20.08	6.533	.341	.787

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
24.10	8.537	2.922	6

3. Ergonomics Practices in Workspace Design

Case Processing Summary

		N	%
Cases	Valid	140	100.0
	Excluded[a]	0	.0
	Total	140	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.847	6

Item Statistics

	Mean	Std. Deviation	N
Workspace Design	3.77	.771	140
Workspace Design	3.74	.743	140
Workspace Design	3.66	.973	140
Workspace Design	3.89	.675	140
Workspace Design	3.87	.821	140
Workspace Design	3.83	.786	140

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Workspace Design	18.99	8.928	.770	.795
Workspace Design	19.02	9.215	.733	.804
Workspace Design	19.11	9.060	.524	.851
Workspace Design	18.87	10.717	.430	.855
Workspace Design	18.89	9.017	.686	.811
Workspace Design	18.94	9.197	.683	.812

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
22.76	13.074	3.616	6

4. Ergonomics Practices in Office Equipment

Case Processing Summary

		N	%
Cases	Valid	139	99.3
	Excluded[a]	1	.7
	Total	140	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.885	4

Item Statistics

	Mean	Std. Deviation	N
Office Equipment	3.87	.867	139
Office Equipment	3.94	.759	139
Office Equipment	3.67	.920	139
Office Equipment	3.83	.851	139

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Office Equipment	11.44	4.755	.824	.823
Office Equipment	11.37	5.364	.762	.851
Office Equipment	11.64	4.841	.725	.864
Office Equipment	11.48	5.179	.702	.870

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
15.31	8.621	2.936	4

5. Level Awareness of Office Ergonomics Practices

Case Processing Summary

		N	%
Cases	Valid	140	100.0
	Excluded[a]	0	.0
	Total	140	100.0

a. Listwise deletion based on all variables in the procedure.

Case Processing Summary

		N	%
Cases	Valid	140	100.0
	Excluded[a]	0	.0
	Total	140	100.0

a. Listwise deletion based on all variables in the procedure.

Item Statistics

	Mean	Std. Deviation	N
Level Awareness	4.04	.757	140
Level Awareness	4.14	.582	140
Level Awareness	4.19	.503	140
Level Awareness	4.17	.587	140
Level Awareness	3.45	.868	140
Level Awareness	4.03	.611	140
Level Awareness	4.09	.569	140
Level Awareness	4.24	.607	140
Level Awareness	4.18	.638	140
Level Awareness	4.21	.621	140
Level Awareness	3.95	.682	140
Level Awareness	4.20	.578	140
Level Awareness	3.94	.648	140

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Level Awareness	48.78	25.857	.481	.890
Level Awareness	48.68	25.414	.746	.876
Level Awareness	48.64	26.190	.717	.879
Level Awareness	48.65	25.481	.727	.877
Level Awareness	49.37	27.919	.159	.912
Level Awareness	48.79	26.583	.504	.887
Level Awareness	48.74	26.052	.647	.881
Level Awareness	48.59	25.410	.712	.877
Level Awareness	48.64	25.296	.691	.878
Level Awareness	48.61	24.931	.777	.874
Level Awareness	48.87	25.163	.658	.880
Level Awareness	48.62	25.647	.710	.878
Level Awareness	48.89	26.865	.424	.891

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
52.82	30.133	5.489	13

6. Job Performance

Case Processing Summary

		N	%
Cases	Valid	140	100.0
	Excluded[a]	0	.0
	Total	140	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	N of Items
.917	5

Item Statistics

	Mean	Std. Deviation	N
Productivity	4.34	.560	140
Productivity	4.28	.551	140
Productivity	4.21	.609	140
Productivity	4.24	.610	140
Productivity	4.26	.592	140

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
Productivity	16.99	4.396	.732	.910
Productivity	17.06	4.241	.830	.891
Productivity	17.12	4.237	.725	.912
Productivity	17.09	4.042	.820	.892
Productivity	17.08	4.073	.838	.888

Scale Statistics

Mean	Variance	Std. Deviation	N of Items
21.34	6.426	2.535	5

APPENDIX E

CORRELATION OUTPUT

		Existing Ergonomics Program	Video Display Terminal	Workspace Design	Office Equipment	Level of Awareness	Job Performance
Existing Ergonomic Program	Pearson Correlation	1	.654(**)	.296(**)	.222(**)	.741(**)	.643(**)
	Sig. (2-tailed)	.	.000	.000	.008	.000	.000
	N	140	140	140	140	140	140
Video Display Terminal	Pearson Correlation	.654(**)	1	.472(**)	.422(**)	.595(**)	.451(**)
	Sig. (2-tailed)	.000	.	.000	.000	.000	.000
	N	140	140	140	140	140	140
Workspace Design	Pearson Correlation	.296(**)	.472(**)	1	.540(**)	.320(**)	.148
	Sig. (2-tailed)	.000	.000	.	.000	.000	.080
	N	140	140	140	140	140	140
Office Equipment	Pearson Correlation	.222(**)	.422(**)	.540(**)	1	.227(**)	.184(*)
	Sig. (2-tailed)	.008	.000	.000	.	.007	.029
	N	140	140	140	140	140	140
Level of Awareness	Pearson Correlation	.741(**)	.595(**)	.320(**)	.227(**)	1	.674(**)
	Sig. (2-tailed)	.000	.000	.000	.007	.	.000
	N	140	140	140	140	140	140
Job Performance	Pearson Correlation	.643(**)	.451(**)	.148	.184(*)	.674(**)	1
	Sig. (2-tailed)	.000	.000	.080	.029	.000	.
	N	140	140	140	140	140	140

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

APPENDIX F

REGRESSION OUTPUT

Variables Entered/Removed[b]

Model	Variables Entered	Variables Removed	Method
1	Video Display Terminal, Office Equipment, Levelof Awareness, WorkspaceDesign, Existing Ergonomic Program[a]	.	Enter

a. All requested variables entered.

b. Dependent Variable: Productivity

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.824[a]	.678	.665	.28686

a. Predictors: (Constant), VideoDisplayTerminal, OfficeEquipment, LevelofAwareness, WorkspaceDesign, ExistingErgonomicProgram

b. Dependent Variable: Productivity

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.354	5	4.271	51.899	.000[a]
	Residual	10.122	123	.082		
	Total	31.476	128			

a. Predictors: (Constant), VideoDisplayTerminal, OfficeEquipment, LevelofAwareness, WorkspaceDesign, ExistingErgonomicProgram

b. Dependent Variable: Productivity

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.579	.267		2.173	.032
	ExistingErgonomic Program	.465	.086	.447	5.426	.000
	WorkspaceDesign	-.186	.052	-.229	-3.574	.001
	OfficeEquipment	.083	.041	.126	2.004	.047
	LevelofAwareness	.618	.090	.528	6.866	.000
	VideoDisplayTerminal	-.091	.076	-.091	-1.193	.235

a. Dependent Variable: Productivity