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A STUDY ON IMPACT OF WORKPLACE DESIGN ON EMPLOYEE'S PRODUCTIVITY IN SELECTED IT COMPANIES IN PUNE REGION

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ABSTRACT

This study is intended to analyze the impact of workplace Design on employee's productivity. The paper commences with a summary of how the quality of the employee's workplace Design impacts on the level of employee's motivation and subsequent productivity. The workplace Design impacts employee morale, productivity and engagement - both positively and negatively. The work place Design in a majority of industry is unsafe and unhealthy. People working in such Design are prone to occupational disease and it impacts on employee's productivity.

What are the key factors in the employee's workplace Design that impact greatly on their level of motivation and productivity. The role of researcher intends to find out the relationship between workplace design and productivity. Since its conception, a number of researches have been carried out on Employee Productivity, most of them in United States of America. A visible research gap exists in the area of identification and measurement of drivers of Employee's workplace Design and its impact on Employee Productivity. This points out the relative importance of this concept and hence the need for research on the same in the Indian context as well

KEYWORDS*:* Employee Productivity, Employee's Workplace Design, Office Design

INTRODUCTION

Background of the Study

In the current changing scenario, as markets become more globalized, rising wage cost and the desire to move up the value chain for software services has prompted many Indian IT firms to go in for personnel productivity enhancement. Competitive survival is causing companies to turn more and more to examining the people side of the productivity equation. A small increase in employee productivity can add a lot of money to the bottom line

Companies have started realizing Employee productivity is key to organizational success and to a country's economy. Increasing employee productivity is one of the most important people-management issues.

A high demand for the employee productivity leaves management teams wondering exactly what to do. Increasing employee productivity is always on the forefront of any managerial mind. With the increased focus on employee productivity, there is a corresponding increase in employee stress experienced in the workplace.

Employee productivity can be significantly hindered by poor workplace Design which contributes to deterioration of employee health and well-being, which further reduces productivity.

Good office design which includes elements that increase collaboration and enable teamwork among employees, combined with flexible and ergonomic can be a key to unlocking productivity and to transforming the working lives of

many people for whom Monday morning is an especially low point of the week.

Employee Productivity is, arguably, the most critical metric for organizations in the twenty first century. The challenge at work is to create a Design in which people are motivated about work priorities.

This is leading employers to continually seek new and creative ways to maximize their employees' productivity and provide the most effective work Design (Marilyn, 2001). Companies have come to realize the importance of comfort in the workplace Design in order to retain quality personnel, increase productivity, and maintain a competitive edge (Luparello, 2004)

Employee productivity depends on the amount of time an individual is physically present at a job and also the degree to which he or she is "mentally present" or efficiently functioning while present at a job.

Companies must address both of these issues in order to maintain high employee productivity, and this may occur through a variety of strategies that focus on employee's workplace Design.

The purpose of this study is to analyze the impact of office design factors on employees' productivity.

STATEMENT OF THE PROBLEM

IT companies operates in a stressful Design, and the employees work under extreme deadlines.

Furthermore, many studies have indicated that much or some of the workspace inhibits, rather than promotes, teamwork and flexibility, which are key factors in productivity (Laabs, 2000).

Today's workplace is different, diverse, and constantly changing. The typical employer/employee relationship of old has been turned upside down.

Management's new challenge is to create a work Design that attracts, keeps, and motivates its workforce. The responsibility lies with managers at all levels of the organization. Businesses must step outside their traditional roles and comfort zones to look at new ways of working. They have to create a work Design where people enjoy what they do, feel like they have a purpose, have pride in what they do, and can reach their potential.

RESEARCH OBJECTIVES

- To explore the significance of Employee Productivity Improvement Practices in IT Companies.
- To find out Co-relation between Employee's Workplace Design and Employee Productivity
- To identify and study Key drivers of Employee's Workplace Design contributing towards enhancement of Employee Productivity.
- To assess whether office design is one of the factors in affecting employees' productivity.

EXPLANATION

THE RELATIONSHIP BETWEEN WORK DESIGN AND PRODUCTIVITY

There are two components to this Design; one is the organization's culture, the other is the climate within individual teams or work groups. Organizational culture – loosely defined as "the way we do things around here" – is comprised of formal and informal factors that are constantly in tension. For example – the need to do things differently and

the need for consistent processes and procedures; the need to pay attention to the external Design when making decisions and at the same time to attend to the organizations internal needs. Organizations that understand and can balance such "creative tension" effectively are more able to achieve performance goals in

Profitability – Quality – Innovation – Market share – Sales growth – Employee satisfaction

The second connection between Design and productivity is at the team or work group level. This is where the majority of work occurs in information-driven or knowledge-driven organizations. Much more than individuals, groups are responsible for innovation and for processes and practices that have the ability to move the organization forward. Recent global research has shown that there are only three things that have a material impact on the ability of groups of knowledge worker to perform at high levels. All are related to the Design or culture in which the team operates. With these components teams can perform at unexpected levels. Without them, even the brightest, most energetic people lose focus.

PRODUCTIVITY IN THE WORK DESIGN

According to the architecture and design firm's Gensler 2006 U.S. Workplace Survey, "Office design has a direct correlation with optimal job performance. Businesses that ignore the design and layout of their workplaces are failing to optimize the full value of their human capital" (Beauty man, 2006).

Good workplace design can make a big difference in staff satisfaction, attraction, motivation, and retention. It can also affect the level of knowledge and skills of workers, how innovative and creating they are, and how they respond to business and technological change. Poor workplace design, by contrast, is linked to lower business performance and higher level of stress experienced by employees (Amble, 2005).

This trend among employers has led to a growing recognition of the importance of designing a work

Design that meets the physical and emotional needs of workers, so that they may be most productive (Proper, 1998) Proper (1998) emphasizes that an effective work Design should provide positive sensory stimulation through the proper use of color, lighting, aroma, space, and furnishings. These elements are seen as critical to effective work activities and workplaces, and they lead to increased productivity of employees. A fundamental element in increasing productivity is the physical work Design. According to a report by the Rocky Mountain Institute in Boulder (Training, 1997), employees could do a much better job if employers paid attention to the work Design.

TO ASSESS WHETHER OFFICE DESIGN IS ONE OF THE FACTORS IN AFFECTING EMPLOYEES' PRODUCTIVITY

It may not come as a complete surprise but the work we do in our office week out and week in is far more productive if the work takes place in a well-designed office. A well designed office signals the values and objectives of the company and the use of design in office interiors communicates a company's values and identity.

Good workplace design can make a big difference in staff satisfaction, attraction, motivation and retention. The study by the Commission for Architecture & the Built Design and the British Council for Offices has found even simple things such as good lighting and having adequate daylight can reduce absenteeism by 15 per cent and increase productivity by between 2.8 per cent and 20 per cent. In order for employees to be productive, they have to be comfortable in their work Design.

Business leaders are urged to take more account of the links between good workplace design and improved business performance when planning and designing new buildings, and overhauling old ones.

Companies are striving to make offices a healthy and comfortable workplace, using ergonomic furniture and accessories, proper lighting, and a functional design to minimize discomfort and distraction and consequently making employees work more productively.

Studies show that comfort and productivity are interrelated, and most experts agree that almost every office can benefit from a few changes in layout and organization.

Figure 1: Office Design and Productivity

TO DISCUSS THE KEY FACTORS IN THE EMPLOYEE'S WORKPLACE DESIGN THAT IMPACT GREATLY ON THEIR LEVEL OF PRODUCTIVITY AND PERFORMANCE

To keep employees satisfied today, it takes an entirely different approach than it did just a few years ago. Indeed, one-third of the executives surveyed by Robert Half International Inc. have changed their opinions and now say the work Design is the most critical factor in keeping an employee satisfied in today's business world. In 1993, only 9% said that the work Design was an important factor in keeping employees satisfied. Other critical factors include the importance of praise and recognition, and compensation each cited by 28% of those surveyed. Six years ago praise and recognition was at the top of the list, cited by 47% of those surveyed. Other significant changes include concern over promotions. Only 4% of executives say that promotions are a big factor in keeping employees satisfied today, compared with 26% who said that in 1993. Furthermore, the importance of compensation and benefits has risen to 28% from just 7% in the 1993 survey.

An employee's workplace Design is a key determinant of their level of productivity. How well the workplace engages an employee impacts their level of motivation to perform.

The Key Factors that Affect Employees' Productivity and Performance Fall into Two Categories

- Those that are driven by procedures, protocols and management requirements **(work Design)**
- The factors that arise from premises, office or factory design **(office design)**

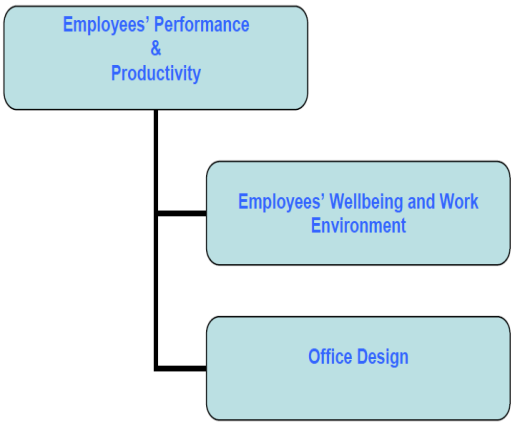

Figure 2: Employees' Performance & Productivity

The Following Factors Reveal the Way in Which the Physical, Technological, and Logical Systems Work Together to Promote Work Process and Increase Employee Productivity While Decreasing Their Stress

Teamwork

The competitive pressures on today's business are tremendous, and employees can no longer just work together; they must think together (Monroe, 1999).

Since teamwork has become a major component in today's work Design, creating a workspace that will support it is very important. Monroe (1999) emphasizes that a

Physical Design that fosters interaction

Ergonomics

A recent survey of 350 major corporations, both professional services and small businesses, found that 82.5% believe that good ergonomics makes employees more productive (Danner, 2001). Ergonomics involves adapting jobs and workspaces to the worker.

By applying ergonomic principles, the employer can reduce medical costs, decrease absenteeism, and positively affect the employees, both physically and psychologically. Ergonomics reduces strains such as physical discomfort,fatigue, and tension. Promoting good posture, for example, can play an important role in reducing worker fatigue and improving productivity.

Ergonomics Office Furniture

Office furniture comprises of desks chairs, the filing system, shelves, drawers, etc. All these components have a specific role to play in the proper functioning of any office and the productivity and the efficiency of the employees. And, one of the most important thing to be considered while buying office furniture is to ensure whether it is ergonomic or not. Ergonomics of office furniture is important because an employee has to work with them for the entire time that he is on

office, and if they are uncomfortable and not user friendly, their working style and efficiency gets hampered considerably, in turn affecting the overall organizations. Non-ergonomic office furniture can also lead to health problems of employees, which again has an adverse effect on the productivity. Ergonomic office furniture ensures that each employee gels well with the things around him, like desks, chairs, computer alignment and even Designal factors. If the employee is uncomfortable due to any reason, his work is bound to get affected. If all factors surrounding the employee are ergonomically correct, then the employee will be comfortable and remain motivated.

Lighting

According to Frank (2000), lighting is a critical element in creating a comfortable work Design. Depending on the situation, the lighting around individuals and groups can either help or hinder productivity

Noise and Acoustics

Cooper, Dewe, and O'Driscoll (2001) suggest that poor noise conditions can have a severe impact on a worker's physical health and psychological well-being. This statement confirms Hower's (1995) findings that high noise levels can cause irritation, increase stress, and reduce productivity

Aroma

According to Welch (1996), unpleasant odors increase the heart rate and that, in turn, might increase stress levels and result in a loss of productivity

Individual Design Controls

Operable windows, furniture with adjustable ergonomic features, dimmable lighting, and task lighting are different types of individual Designal control. Such benefits allow employees to maximize their personal comfort (RSMeans, 2002).

The ability to control the workplace Design Vangen (1999) points out that workplace stress is affected by a person's inability to control his/her office Design.

Clinical research has shown that ordinary office activities, such as ringing telephones, voice levels, temperature, and so on, lead to a chemical reaction that increases stress and reduces productivity.

Privacy

Allie (1996) found that lack of privacy can be a major cause of stress among employees. Not only do many tasks require a total absence of distraction, each individual has a different level of tolerance when it comes to privacy. Therefore, there should be a variety of design solutions to address the privacy issue.

Furniture

Office furniture comprises of desks chairs, the filing system, shelves, drawers, etc. All these components have a specific role to play in the proper functioning of any office and the productivity and the efficiency of the employees. And, one of the most important thing to be considered while buying office furniture is to ensure whether it is ergonomic or not Ergonomics of office furniture is important because an employee has to work with them for the entire time that he is on office, and if they are uncomfortable and not user friendly, their working style and efficiency gets hampered considerably,

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The furniture should provide adjustable ergonomic features and be made without toxic gas emitting dyes, finishes, foams, or adhesives. Furniture should be extremely durable to avoid early replacement.

HYPOTHESIS OF THE STUDY

- Hypothesis 1: There is co-relation between Employee's work Design and Employee Productivity.
- Hypothesis 2: There is difference in the level of effect of various Employees' work Design factors on Employee Productivity.
- Hypothesis 3: The identified key drivers of Employee's work Design positively affect the level of Employee Productivity.

REPORTS AND SURVEYS

Table 1: Work Design Factors Affecting Performance

Survey/Reports	Findings
Source paper	Factors affecting motivation , job satisfaction and performance
Aronoff and Kaplan	Physical setting, motivation, respect, satisfaction with goals, trade-offs expectations and equity
Arvey et al	Locus of control, neuroticism, affectivity related to job satisfaction, education, age, cognitive ability, socio-economic status, career goals, task identity, autonomy, skill variety, feedback, congruence between personality and work Design
Bakke	Job specification and requirements, communication system, status, reward, pay, organizational charter, identity, knowing job, initiatives, job security, control, pride and self-respect.
Blackler and Williams	Identity, meaning of work, social interaction, responsibility to peer group, goal setting, equity, expectancy, group cohesiveness, peer pressure
Brown	Relationship with management, relationship with co-workers, responsibility, pride of craft, self-respect, status, sense of usefulness and control over work.
Sundstrom	Responsibility and autonomy, pay, job security, relationship with co-workers, promotion prospects, company policy, supervision, the work itself and physical Design.

RESEARCH METHODOLOGY

This is a basic research study that employs a researcher developed survey. The purpose of this study was to determine the impact of various Employees' work Design factors on Employee Productivity in selected IT Companies.

In order to accomplish this, a Survey in Randomly selected IT Companies was chosen so that the impact could be documented quantitatively through questionnaire data. Quantitative data was collected by means of 2 sets of questionnaires utilizing a Likert-scale. Questions are structured to find which organizational factors (i.e., workplace design features, management support, technology and equipment, and coworker support) in relevant workplace employees perceive to hamper or encourage their ability to perform effectively. The first one was about the office design and its impact on

employee productivity, and the second questionnaire was about the work Designs and its impact on employee Productivity.

The study covers most of the business lines employees including Project & HR Managers of selected IT companies in Pune. Respondents rated the degree of impact of various employee's work Design factors on Employee Productivity.

DATA ANALYSIS AND INTERPRETATION

The data was calculated and analyzed using graphic table for each question in section one and two of the questionnaire.

The questionnaires were sent to 150 business lines employees including Project Managers and HR Managers of IT Companies. The respondents consisted of 50 business lines employees of small scale companies, 50 business lines employees of mid-size companies, and 50 business lines employees of large scale companies.

Table 2: Is the Breakdown of the Respondents

Size of the Company	No of Respondents (Business Lines Employees Including Project & HR Managers)	Percentage
Small	50	100%
Medium	50	100%
Large	50	100%

Table 3: Impact of Various Employees' Work Design Factors on Employee Productivity

Factors	Impact on Employee Productivity					
	Increase		Decrease		No Change	
	No. of Respondents (n)	%	No. of Respondents (n)	%	No. of Respondents (n)	%
Workplace design features	28	93.3	0	0	2	6.6
Management support	26	86.6	1	3.3	2	6.6
Technology and equipment	28	93.3	0	0	2	6.6
Coworker support	24	80	1	3.3	5	16.6
Effective communication	26	86.6	1	3.3	3	10

Table 4: Impact of Various Office Design factors on Employee Productivity

Office Design Elements	Pearson Correlation (r)	Significance (2-Tailed)
Work space	.194(*)	.047
Comfortable furniture with adjustable ergonomic features	. 467(**)	.000
Noise and Acoustics	.190(*)	.046
Appropriate Lighting	.720(**)	.000

Temperature and Air Quality	.467(**)	.000
Aroma	.194(*)	.047
Spatial arrangement	.467(**)	.000
Privacy	.380(**)	.000
Individual Design controls built-in flexibility (The ability to control the workplace Design)	.429(**)	.000

r is Pearson correlation coefficient

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

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

The analysis of the results indicate a positive correlation between furniture and productivity (r = 0.194) and is significant at 0.05. This shows that when the furniture of the office is not comfortable and according to the needs of the employees their productivity is affected. There is a positive relationship between Noise and Productivity. The correlation coefficient (r=0.429) is significant at 0.01. The positive relationship between lighting and productivity (r = 0.720) at 0.01 shows that employees' productivity highly correlates to the lighting conditions in the offices.

The results of temperature reveal its significant correlation with productivity (r=0.467) at p=0.01. Spatial Arrangement is the space factor in office design; when the correlation was calculated in SPSS it gave a positive relation with productivity (r=0.380) where p=0.01. It means that the spatial arrangement has a considerable effect on the employees' Productivity.

Table 5: Impact of Various Office Design Factors on Employee Productivity in Percentage

Factors	Impact on Employee Productivity					
	Increase		Decrease		No Change	
	No. of Respondents (n)	%	No. of Respondents (n)	%	No. of Respondents (n)	%
Work space	26	86.6	1	3.3	2	6.6
Appropriate Lighting	28	93.3	0	0	2	6.6
Temperature	24	80	1	3.3	5	16.6
Noise and Acoustics	26	86.6	1	3.3	3	10
Aroma	23	76.6	3	10	4	13.3
Individual Design controls built-in flexibility (The ability to control the workplace Design)	19	63.3	2	6.6	9	30
Privacy	22	73.3	3	10	5	16.

						6
Indoor Air Quality	20	66.6	3	10	7	23.3
Comfortable furniture with adjustable ergonomic features	19 26	63.3 86.6	2 1	6.6 3.3	9 2	30 6.6
Spatial arrangement	24	80	1	3.3	5	16.6

From the above Tables, Following Observations are Noted:

It has been observed from the above table B that 93.3% of respondents have realized a significant increase in Employee Productivity due to practice of Workplace design features, Technology and equipment followed by Management support. Only 6.6% of respondents noticed that there is no significant change in employee productivity due to Workplace design features, Technology and equipment.

It has been observed from the above table C that

- 93.3% of respondents have realized a significant increase in Employee Productivity due to appropriate lighting, only 6.6% of respondents noticed that there is no significant change in Employee Productivity.
- 86.6% of respondents have realized a significant increase in Employee Productivity due to Comfortable furniture with adjustable ergonomic features, open space. Only 6.6% of respondents noticed that there is no significant change in Employee Productivity and 3.3% of respondents noticed a slight decrease in employee productivity as a result of these factors.
- 80% of respondents have realized a significant increase in Employee Productivity due to spatial arrangement. Only 16.6% of respondents noticed that there is no significant change in Employee Productivity and 3.3% of respondents noticed a slight decrease in Employee Productivity as a result of spatial arrangement.

This relationship between office design and productivity was determined by using the Pearson's Correlation in standard statistical software "Statistical Package for Social Sciences" (SPSS). Pearson's Correlation is a measurement of the strength of a linear or straight line relationship between two variables. The Correlation Coefficients indicate both the direction of the relationship and its magnitude

Table 6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.759(a)	.576	.555	.5

R= Correlation coefficient

Predictors: (Constant), Spatial arrangement, Noise, Furniture, Lighting, Temperature

Table 7: Regression Results of Model

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	35.717	5	7.143	26.907	. 000(a)
Residual	26.283	99	.265		
Total	62.000	104			

df= degree of freedom , F=regression mean square/residual mean square ,Sig=P-value

Predictors: (Constant), Spatial arrangement, Noise, Furniture, Lighting, Temperature

Dependent Variable: Productivity Source: Survey

The coefficient of determination R. square = 0.576. This gives us the ratio of explained variation to total variation. On converting the R. square value to percentage it comes to be approximately 58 Percent. From this percentage it is concluded that 58 percent of the variability of employees' productivity is accounted for by the variables in this model.

The regression co-efficient for the predictor variables; furniture, noise, lighting, temperature and spatial arrangements are 0.015, -0.068, 0.739, and 0.021 and 0.162, respectively.

The coefficient values show, the change in productivity with a unit change in a variable value, when all the other variables are held constant. When we analyze the coefficient value for the variable, 'lighting' we can say that there is an increase of 0.739 in the productivity of an employee for every unit increase (betterment) in the lighting conditions of the office, keeping all the other variables constant.

The Regression Equation:

Employee Productivity = -0.645 + .015 F - 0.068 N+ 0.739 L + 0.021 T + 0.162 SA

(Where F=furniture, N=noise, L=lighting, T=temperature and SA=spatial arrangements)

RECOMMENDATIONS

Based on the results of the survey, the following recommendations are made:

Light and Daylight

Each occupation has its own potential Designal sources of stress. For example, in jobs that require close detailed work, poor lighting or glare can create eyestrain. With respect to electrical light, employees need to take into consideration several aspects of artificial lighting solutions.

- The quantity of light
- The quality of the lighting system. Quality factors include the color of the light
- Low mounted luminaries, which deliver uniform, balanced illumination with pleasing brightness
- Glare reduction by the use of fixture shields or louvers
- Reduction of flicker sound by using fluorescent lamps

Basic lighting design of offices must take into account the amount of natural light, proper windows design.

Office Ergonomics

Employers should be concerned about ergonomics, since ignoring these principles will result in reduced productivity and increased medical costs. The following are some of the suggestions that the employer should consider when seeking improving the ergonomic aspects of their work space:

- Provide chairs with range of motion. These include vertical, horizontal, and back adjustments.
- Give employees options in furniture shapes, sizes, and arrangements, based on their height and the task that they will be required to do, such as lifting, filing etc.
- Encourage moderate exercise during the work day.
- For computer users, consider buying large monitors, footrests, ergonomic keyboards, and wrist support devices.
- For heavy phone users, provide headsets for hands-free talking.

Noise and Acoustics

Several strategies that employers can apply to reduce noise:

- High-performance acoustical ceiling systems. The materials in the ceiling should be able to absorb sounds striking at angles of incidence of 45 to 55 degrees (the angles that allow sound to bounce over cubical walls rather than entering the cubicle).
- Carpeting or other sound-damping flooring.
- Furniture should be higher than 53” to provide seating acoustical privacy with a Sound Transmission Class (STC) performance rating of 20 or greater.

Personalization and Control of the Workplace

The employees say in the design of their immediate work Design increases the employees’ morale and reduces their tension. Today’s employees expect to have more control over their immediate office Design with key elements like temperature, lighting, ventilation, and noise.

Meditation, Relaxation, and Exercise Rooms

The purpose of these facilities is to provide employees with an area, equipment, and qualified staff to encourage learning and practicing stress management and relaxation techniques. All of these features help the employee relax and ultimately be more productive.

Fitness Centers

This is important, since physical fitness can be promoted in the workplace for the benefit of everyone, both employers and employees.

CONCLUSIONS

The result of this study indicates that the productivity of people in their workplace can be greatly influenced by the Design and physical work space they occupy on a daily basis. The following is a discussion of the result from the

survey

- As indicated by the result of the study, IT Companies in Pune is realizing the value of the direct benefits of providing an improved work Design
- As indicated by the results of the study, majority of managers surveyed believe that above mentioned practices are necessary to boost employee's morale. Managers realize that in order to maintain employees interest in the day to day operations, they need to be motivated from time to time and need to be engaged both emotionally and intellectually with their job as well as with their organization. It appears that Good working Designs can help employers recruit and retain well-qualified employees, and any improvements in the well-being of employees are in the best interests of the employers themselves.
- These tools are going to continue to thrive as a valuable tool for managers to improve productivity of employees.
- The study suggests that a company that provides a well-designed work Design not only enhances the wellbeing of its employees but also increases productivity and may ultimately reduce its healthcare costs.

REFERENCES

1. Allie, P. (1996). Psychological stress in today's office Environment. *Supervision, 57,* 3.Retrieved September 20, 2002, from Wilson Select Plus database.
2. Amble, B. (2005, May). Poor workplace design damages productivity. Retrieved May 20, 2007, from http://www.management-issues.com/2006/8/24/research/poor-workplacedesign-damages-productivity.asp
3. Higley, A. (2003, April). Employee Performance; Benefits of chair massage. *Employment Times*. Retrieved May 20, 2007, from http://www.employmenttimesonline.com/career_advisor/article.php?ID=405
4. Hower, K. B. (1995, January/February). The mind and body connection. Interior & *Resources,* 64-67. September 15, 2001 from Wilson Select Plus database.93

APPENDICES

Conceptual Framework

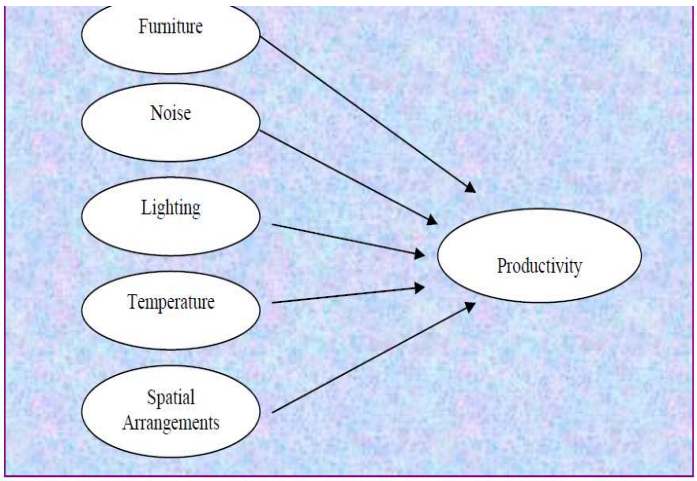

Figure 3: the Effect of Five Basic Elements on Productivity