Impact of Office Ergonomics on Business Performance – (In Special Reference to Noida Region)

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***Abstract*: In the past few decades, there has been a strong trend for corporate organizations and businesses to reconfigure the spaces of their offices in new ways and models. In addition, the shift towards more exciting and flexible workplace environment and the need to meet the diverse and growing expectations and requirements of different employees has led to the rise of debates about how and where productive work is accomplished. In a 2003 survey by Management Today magazine, virtually all (97 per cent) of respondents said that they regarded their place of work as a symbol of whether or not they were valued by their employer. Office ergonomics have been recommended by many studies as one of the key guides to equipping employees at the workplace to help produce best performance. It is the quality of the employee's workplace environment that most impacts on the level of employee's motivation and subsequent performance. How well they engage with the organization, especially with their immediate environment, influences to a great extent their error rate, level of innovation and collaboration with other employees, absenteeism and, ultimately, how long they stay in the job Al-Anzi (2009). This study helps to assess the impact of office ergonomics on business performance in Noida region; to analyze the office design, finishes and furnishing at the offices in Noida region, to assess the impact of office ergonomics in the design, finishes and furnishing in terms of their suitability and comfort of the employees; to identify the impact of office ergonomics on employee health, safety and security. Here in this study we use convince sampling and the target sample was from Noida region. We collect questionnaire by using questionnaire method and the analysis is done by using SPSS, correlation analysis and data was represented by using percentages, frequencies, mean, and standard deviation. The study demonstrated that office ergonomics deficiencies at the offices in this region which includes outdated office design and décor, inadequate office illumination, un-ergonomic office furniture, unsuitable office design and décor have variedly impaired the performance of an average employee by between 30 to 70 percent. The study recommends the relocation of the office to a purpose-built office facility that integrates high standards of office ergonomics, and companies should undertake post-occupancy evaluation one year after occupation of the new office.**

INTRODUCTON:

Office Ergonomics and defines it as the branch of ergonomics dealing specifically with the office environment. This field of ergonomics considers how key workplace elements such as workstations, computers, chairs, lighting, noise level, room temperature etc. could be tailored to fit and enhance employee health, safety and performance. From the definition, the goal of office ergonomics is to set up office work space that fits and adequately supports the needs of the employee in his quest to execute a task.

It focuses on how offices are designed and laid out; furniture and equipment are set up in the workplace. In addition, ergonomics consider the impact of other workplace elements such as air quality, noise levels, color schemes, room temperature, lighting, general flexibility on employee performance. Generally, from the corporate perspective, the performance of an employee is often assessed largely by the output that employee produces, given the requisite workplace environment, tools, technology, skill set among others etc.

Studies have revealed that among some of the factors that affect employee performance are; employee's ability to learn and perform the task required, expectations to achieve and standards by which to achieve them, knowledge and skills necessary to perform the job, feedback from management regarding the status of the employee's performance, acceptable working conditions and equipment to perform the job effectively, incentives in place that positively reinforce good performance.

Dr. Michael O'Neil, Senior Director of Workplace Research at Knoll Incorporated in his article "Office Ergonomic Standards; Layperson's Guide" published in 2011 asserts that Furniture designed using ergonomic principles can improve performance and reduce workplace injury. According to Gutnick (2007), a study by The National Safety Council established that on an average workday, one million employees will be absent from work due to job stress.

Other researchers such as Taiwo (2009), claims that about 86% of productivity problems reside in the work environment of organizations. The work environment has effect on the performance of

employees. The type of work environment in which employees operate determines the way in which such enterprises prosper.

Although other organizational elements such as praise and recognition, compensation and financial reward impact on employee performance, studies have also shown that an employee's workplace environment is a key determinant of their level of performance. How well the workplace engages an employee impacts their level of motivation to perform.

Indeed poor workplace environment influences employees: health and safety, error rate, level of innovation, collaboration with other employees, absenteeism and, ultimately, how long they stay in the job.

In Beer et al. (1994) as cited in Taiwo (2009), we observe that work systems do not only affect commitment, competence and cost effectiveness but also have long term effects on physical health, mental health and longevity of life of employees.

One major benefit derived from pursuing office ergonomics is that it reduces the risk of injury by adapting the work to fit the person instead of forcing the person to adapt to the work. In addition to injury prevention, office ergonomics is also concerned with enhancing work performance, by removing the barriers that exist in many work places that prevent employees from performing to the best of their abilities. This ultimately helps people work more effectively, efficiently, and productively at their jobs (Washington State Department of Labor and Industries, 2002). According to the Washington State Department of Labor and Industries (2002) ergonomics improvements to the work environment are primarily used to create a safer and more healthful work environment, and that a company may experience other benefits including increased productivity, increased work quality, reduced turnover, reduced absenteeism, and increased morale.

BACKGROUND OF THE STUDY According to the Washington State Department of Labor and Industries (2002), if workers are required to adapt to a job that exceeds their body's physical limitations, they can become injured, especially with Work-related Musculoskeletal Disorders (WMSD's), which account for over 40% of all Washington State Fund workers' compensation claims among office workers. Numerous studies have shown that employee performance and satisfaction are substantially impacted upon by key elements in the office environment such as furniture, noise levels, lighting, temperature, air quality and general comfort.

Researchers in India have over the year's demonstrated little interest in the subject of ergonomics and for that matter office ergonomics. As a result research material on the subject appears to be scanty. One of the few studies on ergonomics in India was in respect of occupational disorders in subsistence farmers (McNeil and O'Neil, 1998). One of the renowned suppliers of office furniture has over the years sought to sensitize people on the immense benefits of high quality ergonomic and durable office furniture through consistent advertisement and occasionally in-studio promotions on FM.

Although studies on office ergonomics in Noida have not been substantial, empirical evidence suggests that the application of ergonomic principles and theories in corporate offices in Noida is rife. Most corporate offices in Noida are increasingly mimicking layouts and finishes which to a large extent typify corporate offices in the advanced world. Evidently, these offices comprise of thoughtfully designed open plan and cellular offices with lush décor, automated work systems and infrastructure that supports employee safety, communication, comfort, motivation and general performance.

RESEARCH STATEMENT

The employee is the ultimate user of the workplace environment, it is therefore imperative that the workplace is designed and equipped to suit the needs of the employee. Office environments need to be designed around the idea that the employee is the most important aspect to consider during design. Buildings need to be designed to appeal and inspire the person that passes by, but more importantly, it must inspire those who work in them (Stoessel, 2001). In the advanced countries where ergonomic workplace environment is used to attract, retain competent employees and further stimulate their performance, the elements of office ergonomics have been adequately studied and utilized to enhance performance. In Noida region however, less attention is paid to office ergonomics as one of the means to enhance performance and ultimately the bottom line. It appears adequate research has not been done on the subject and its impact on the performance of the average employee. The aim of this study is to buttress the evidence that leads to the need for a thoughtfully designed and ergonomic office environment that will maximize employee performance in Noida region.

LITERATURE REVIEW

[1] **(Leblebici, 2012),** Many business executives are under the mistaken impression that the level of employee performance on the job is proportional to the size of the employee's compensation package. Although compensation package is one of the extrinsic motivation tools, it has a limited short term effect on employees' performance. A widely

accepted assumption is that better workplace environment motivates employees and produces better results.

[2] **(Al-Anzi, 2009)**, essentially, an elegant and functional workplace environment often culminates in improved employee efficiency and productivity. In recognition of this fact, most offices are now designed and furnished with the employee in mind to ensure that his workplace environment including furniture and equipment adequately supports and induces high performance. The quest to equip employees and workers with most suitable workplace environment, furniture, equipment, tools and techniques to discharge their duties efficiently and effectively is the fundamental philosophy behind the development and growth of ergonomics. The performance of an employee is measured actually by the output that the individual produces and it is related to productivity. At corporate level, productivity is affected by many factors such as employees, technology and objectives of the organization. It is also dependent on the physical environment and its effect on health and employees' performance.

[3] **BusinessDictionary.com (2012)** defines workplace environment as a location where a task is completed. When pertaining to a place of employment, the work environment involves the physical geographical location as well as the immediate surroundings of the workplace, such as a construction site or office building. Typically involves other factors relating to the place of employment, such as the quality of the air, noise level, and additional perks and benefits of employment such as free child care or unlimited coffee, or adequate parking. Besides manufacturing plants and other specialized production unit, nearly all employee productive activities take place in the office environment. In other words, most workplace environments are fundamentally office environments.

[4] **Hameed (2009)**, Office environment as defined by BNet Business Dictionary (2008) and cited in Hameed (2009) is, "*the arrangement of workspace so that work can be performed in the most efficient way*". Office design incorporates both ergonomics and work flow, which examine the way in which work is performed in order to optimize layout. Office design is an important factor in job satisfaction. It affects the way in which employees work, and many organizations have implemented open-plan offices to encourage teamwork. Office design is very vital in employee satisfaction, and the broad concept of office design also includes the workflow.

[5] **BNet Business Dictionary (2008),** Office design is defined as, "the arrangement of workspace so that work can be performed in the most efficient way". Office design incorporates both ergonomics and work flow, which examine the way in which work is performed in order to optimize layout. Office design is an important factor in job satisfaction. It affects the way in which employees work, and many organizations have implemented open-plan offices to encourage teamwork. Office design is very vital in employee satisfaction, and the broad concept of office design also includes the workflow. The work is analyzed initially and it is identified that how it is accomplished and then the overall setting of the office is made according to that flow. This ensures the smooth running of work in the office without hindrances.

[6] **Rolloos (1997)**, defined the productivity as, "productivity is that which people can produce with the least effort".

[7] **Sutermeister (1976),** defined the productivity as, "output per employee hour, quality considered".

[8] **Dorgan (1994)** defines productivity as, "the increased functional and organizational performance, including quality". Productivity is a ratio to measure how well an organization (or individual, industry, country) converts input resources (labour, materials, machines etc.) into goods and services. In this case, we are considering performance increase as when there is less absenteeism, fewer employee leaving early and less breaks; whereas in a factory setting, increase in performance can be measured by the number of units produced per employee per hour. In this study, subjective productivity measurement method is used. The measures of this method are not based on quantitative operational information. Instead, they are based on personnel's subjective assessments.

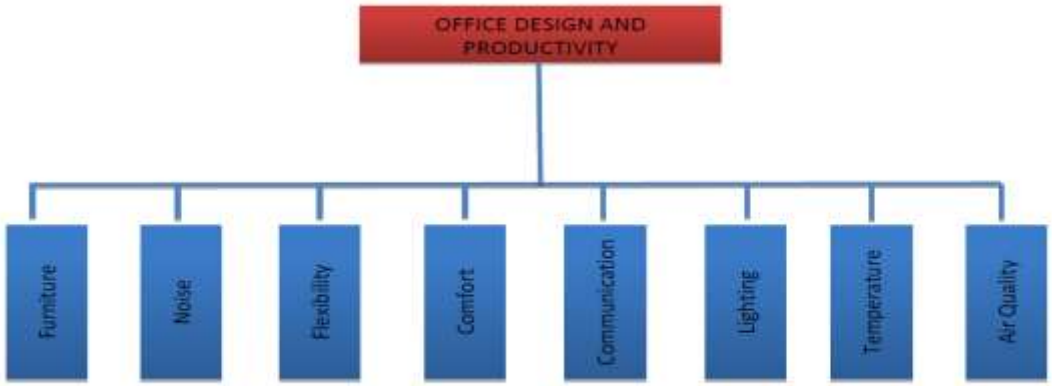
[9] **Wang and Gianakis (1999)** have defined subjective performance measure as an indicator used to assess individuals' aggregated perceptions, attitudes or assessments toward an organizations product or service. Subjective productivity data is usually collected using survey questionnaires. Subjective data can also be descriptive or qualitative collected by interviews.

[10] **(Clements-Croome and Kaluarachchi 2000)** Subjective productivity data is gathered from employees, supervisors, clients, customers and suppliers.

[11] **(Uzee, 1999; Leaman and Bordass, 1993; Williams *et al.* 1985)** Over the years, many organizations have been trying new designs and techniques to construct office buildings, which can increase productivity, and attract more employees. Many authors have noted that, the physical layout of the workspace, along with efficient management processes, is playing a major role in boosting employees' productivity and improving organizational performance.

[16] **Al-Anzi (2009)** for a productive office environment consists of a number of elements. Identifies; furniture, noise, flexibility, comfort, communication, lighting, temperature and air

quality as the constituents of an office design and productivity. These elements are shown on Figure



Source: Al-Anzi (2009)

Office Design and Productivity

RESEARCH METHODOLOGY

Type of research

This research adopts the case study approach by examining the office ergonomics situation of various offices in Noida region. Yin (1984) defines the case study research method as an empirical inquiry that investigates a contemporary phenomenon within its real-life context; when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are used.

The case study research design has been used by many researchers as it has proven to be a useful tool for investigating trends and specific situations in many scientific disciplines. The findings from the research will however be generalized for similar entities.

Main objective:

The principal objective of the work was to assess the impact of office ergonomics on business performance in Noida region. The specific objectives were to:

1. To analyze the office design, finishes and furnishing at the offices in Noida region.
2. To assess the impact of office ergonomics in the design, finishes and furnishing in terms of their suitability and comfort of the employees;
3. To identify the impact of office ergonomics on employee health, safety and security

Sources of data

There are two principal types of data: primary and secondary data.

Data for the study were obtained from both primary and secondary sources. Primary data was obtained directly from employees and management of offices in Noida region through mainly the administration of questionnaires during the fieldwork. Secondary data was also obtained from reports and other documents, as well as from journals, books, and from the internet, among others. Literature obtained from secondary sources regarding workplace environment and performance was reviewed to identify workplace environment and strategies that adequately support the realization of corporate objectives.

The various workspace types such as enclosed cubicles with partition walls, cellular offices with floor-to-ceiling walls, and desks, chairs, computers and other office equipment located in the various offices was studied with the aim of gathering information on how they impact on employee performance.

Target population

Kitchenham (2002) defines target population as the group or the individuals to whom the survey applies. In other words, you seek those group or individuals who are in a position to answer the questions and to whom results of the survey apply. The target population for this study was the employees of the Noida region's companies. As far as this work is concerned therefore, customers and other service providers such as bankers were not interviewed. Also out of the sampling frame are security officials and casual workers.

Sampling

A total of 50 employees were drawn from the various companies and units in Noida region for the survey. The respondents were chosen by the simple random sampling procedure, which gives everyone an equal chance of being selected. Kitchenham (2002) defines simple random sampling as a method of sampling in which every member of the target population has the same probability of being included in the sample. This form of sampling

tends to eliminate subjectivity and obtains a sample that is both unbiased and representative of the target population. This method also facilitated the generalization of the findings from the study.

Data collection

The main tool for data collection was the questionnaire. A questionnaire is a formalized set of questions for obtaining information from respondents that translate the researcher's information needs into a set of specific questions that respondents are willing and able to answer. The selected respondents were contacted and informed of the project and what it seeks to achieve. The respondents were all well-educated and could read and understand the questionnaires with little guidance. To ensure uniformity, the questions were mostly close ended, although there were few instances for open ended questions, in order to give them the chance to express themselves freely. In addition to the questionnaire, direct observations of office ergonomics situations were done in randomly selected offices. The views and opinions of head of Unit and Managers on the subject were acquired through an unstructured interview. Punch (1998) explains an unstructured interview as a way to understand the complex behavior of people without imposing any a prior categorization which might limit the field of inquiry. The flexibility of this approach afforded the opportunity to gain in-depth information regarding management's perspectives on the subject.

DATA ANALYSIS

The data obtained from the questionnaire was validated through vetting for consistency and completeness. Subsequently, the responses were partitioned into homogeneous sub-groups to facilitate analysis. The data was analyzed quantitatively by applying CHI- SQUARE test, using the Statistical Package for the Social Sciences (SPSS), and Microsoft Excel, and results presented through graphs, pie charts, and tables. Pictures of unique offices to show office arrangement, seating arrangement, furniture etc., were also taken for good visual effect.

Sampling procedure:

Sample Size: A sample size of 50-75 respondents from many offices in Noida region was taken.

Sampling Area: Questionnaires were distributed to population who are employees in many offices in Noida region.

Sample Method: In this research effort "Convenience Sampling" was used. This method is used to make research procedure faster by obtaining a large number of accomplished questionnaires rapidly and efficiently.

Measures:

We used questionnaire as an instrument to obtain required data for analysis of the hypothesis we developed. In this study we used 1- LIKERT scale and In Likert scale anchored from "strongly agree" (1) to "strongly disagree" (5) to measure the level of agreement between various points.

STATISTICAL TOOLS USED

Factor Analysis

Here factor analysis was employed to explore the underlying factors associated internet advertising. Generally, KMO is used to assess which variables need to drop from the model due to multi Collinearity. The value of KMO varies from 0 to 1, and KMO overall should be .60 or higher to perform factor analysis. If not then it is necessary to drop the variables with lowest anti image value until KMO overall rise above .60. Result for the Bartlett's Test of Sphericity and the KMO reveal that both were highly significant and concluded that this variable was suitable for the factor analysis. It can be seen the KMO is more than 0.6 is acceptable and it is in mediocre range, it means no need for drop any variables, besides P-value is less than 0.001, means we can precede with factor analysis.

Besides, the correlation of the items is between 0.3 to 0.9 which means all the items correlation is acceptable, in this case there is no duplication, and all have a association.

Moreover, we grouped the questions regarding to every hypothesis and again make a correlation between them and dependent factor, it can be seen although there is a good correlation between internet advertising and purchase decision of consumer. Factor analysis was carried out on the effective factor on internet advertising to group together the variables that are highly correlated.

RELIABILITY TEST FOR FACTOR ANALYSIS

Scale: ALL VARIABLES

Table 5.2: Case Processing Summary

		N	%
Cases	Valid	51	96.2
	Excluded[a]	2	3.8
	Total	53	100.0

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

Table 5.3: Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.837	.822	21

Table 5.4: Item Statistics

	Mean	Std. Deviation	N
BA	3.76	1.159	51
BB	3.53	1.027	51
BC	3.76	1.210	51
BD	3.55	1.172	51
BE	3.55	1.083	51
BF	3.65	1.110	51
BG	3.63	1.038	51
BH	3.63	1.216	51
BI	3.88	.952	51
BJ	3.51	1.027	51
CA	3.80	1.149	51
CB	3.76	1.159	51
CC	3.65	1.074	51
CD	3.69	1.175	51
CE	3.57	1.063	51
DA	2.47	1.155	51
DB	2.39	1.021	51
DC	2.63	1.183	51
DD	2.35	1.055	51
DE	2.02	.812	51
DF	2.35	.868	51

Table 5.5: Summary Item Statistics

	Mean	Minimum	Maximum	Range	Maximum / Minimum	Variance	N of Items
Item Means	3.292	2.020	3.882	1.863	1.922	.377	21
Item Variances	1.180	.660	1.478	.819	2.241	.050	21

Table 5.6: Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
BA	65.37	102.398	.785	.909	.812
BB	65.61	105.323	.749	.944	.815
BC	65.37	101.318	.796	.917	.810
BD	65.59	103.367	.731	.895	.814
BE	65.59	107.927	.581	.851	.822
BF	65.49	104.015	.747	.895	.814
BG	65.51	105.615	.725	.803	.816
BH	65.51	103.175	.709	.924	.815
BI	65.25	107.834	.679	.864	.820
BJ	65.63	107.678	.630	.685	.821
CA	65.33	102.827	.773	.872	.812
CB	65.37	102.638	.774	.884	.812
CC	65.49	105.575	.699	.947	.817
CD	65.45	103.533	.722	.934	.815
CE	65.57	104.970	.737	.905	.815
DA	66.67	133.107	-.461	.828	.867
DB	66.75	129.554	-.363	.895	.860
DC	66.51	131.415	-.393	.927	.865
DD	66.78	127.613	-.275	.836	.857
DE	67.12	129.146	-.414	.752	.856
DF	66.78	126.813	-.277	.790	.853

Table 5.7: Scale Statistics

Mean	Variance	Std. Deviation	N of Items
69.14	122.161	11.053	21

TEST FOR FACTOR ANALYSIS
For Part B:

Table 5.8: Correlation Matrix[a]

		BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ
Correlation	BA	1.000	.796	.801	.730	.679	.649	.607	.589	.591	.489
	BB	.796	1.000	.714	.818	.669	.781	.583	.626	.618	.517
	BC	.801	.714	1.000	.756	.650	.696	.613	.755	.774	.501
	BD	.730	.818	.756	1.000	.609	.659	.599	.652	.759	.461
	BE	.679	.669	.650	.609	1.000	.364	.435	.371	.530	.553
	BF	.649	.781	.696	.659	.364	1.000	.716	.804	.603	.494
	BG	.607	.583	.613	.599	.435	.716	1.000	.664	.703	.538
	BH	.589	.626	.755	.652	.371	.804	.664	1.000	.687	.491
	BI	.591	.618	.774	.759	.530	.603	.703	.687	1.000	.410
	BJ	.489	.517	.501	.461	.553	.494	.538	.491	.410	1.000
Sig. (1-tailed)	BA		.000	.000	.000	.000	.000	.000	.000	.000	.000
	BB	.000		.000	.000	.000	.000	.000	.000	.000	.000
	BC	.000	.000		.000	.000	.000	.000	.000	.000	.000
	BD	.000	.000	.000		.000	.000	.000	.000	.000	.000
	BE	.000	.000	.000	.000		.004	.001	.004	.000	.000
	BF	.000	.000	.000	.000	.004		.000	.000	.000	.000
	BG	.000	.000	.000	.000	.001	.000		.000	.000	.000
	BH	.000	.000	.000	.000	.004	.000	.000		.000	.000

	BI	.000	.000	.000	.000	.000	.000	.000	.000	.001
	BJ	.000	.000	.000	.000	.000	.000	.000	.000	.001

a. Determinant = 5.229E-005

Table 5.9: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.842
Bartlett's Test of Sphericity	Approx. Chi-Square	451.857
	Df	45
	Sig.	.000

Table 5.10: Communalities

	Initial	Extraction
BA	1.000	.731
BB	1.000	.772
BC	1.000	.804
BD	1.000	.758
BE	1.000	.505
BF	1.000	.700
BG	1.000	.626
BH	1.000	.672
BI	1.000	.679
BJ	1.000	.425

Extraction Method: Principal Component Analysis.

Table 5.11: Total Variance Explained

Component	Initial Eigen values			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6.670	66.698	66.698	6.670	66.698	66.698
2	.903	9.034	75.733			
3	.689	6.890	82.623			
4	.516	5.158	87.781			
5	.366	3.664	91.445			
6	.323	3.228	94.673			
7	.218	2.184	96.856			
8	.150	1.499	98.355			
9	.104	1.036	99.391			
10	.061	.609	100.000			

Extraction Method: Principal Component Analysis.

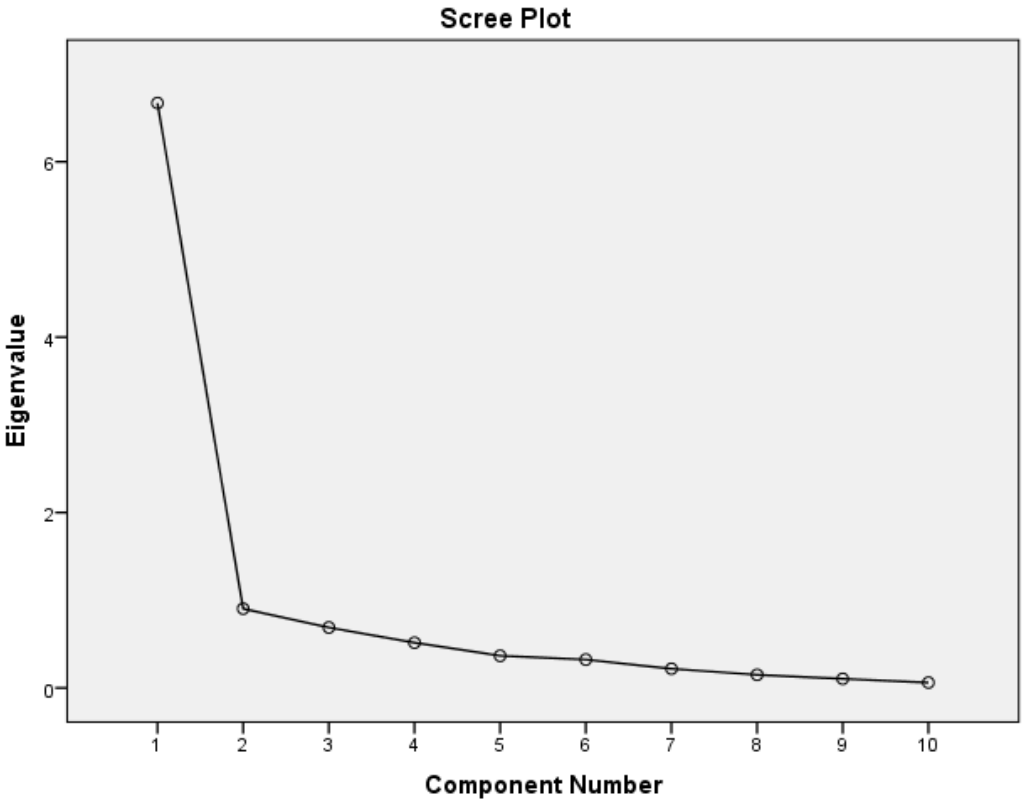


Figure 5.1: Scree Plot

Table 5.12: Component Matrix[a]

	Component
	1
BA	.855
BB	.878
BC	.897
BD	.871
BE	.711
BF	.836
BG	.791
BH	.819
BI	.824
BJ	.652

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

For Part C

Table 5.13: Correlation Matrix[a]

		CA	CB	CC	CD	CE
Correlation	CA	1.000	.866	.672	.739	.682
	CB	.866	1.000	.703	.738	.646
	CC	.672	.703	1.000	.878	.740
	CD	.739	.738	.878	1.000	.754
	CE	.682	.646	.740	.754	1.000
Sig. (1-tailed)	CA		.000	.000	.000	.000
	CB	.000		.000	.000	.000
	CC	.000	.000		.000	.000
	CD	.000	.000	.000		.000
	CE	.000	.000	.000	.000	

a. Determinant = .009

Table 5.14: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.829
Bartlett's Test of Sphericity	Approx. Chi-Square	225.706
	Df	10
	Sig.	.000

For Part D

Table 5.15: Correlation Matrix[a]

		DA	DB	DC	DD	DE	DF
Correlation	DA	1.000	.434	.438	.370	.438	.649
	DB	.434	1.000	.852	.779	.569	.405
	DC	.438	.852	1.000	.781	.653	.423
	DD	.370	.779	.781	1.000	.575	.495
	DE	.438	.569	.653	.575	1.000	.501
	DF	.649	.405	.423	.495	.501	1.000
Sig. (1-tailed)	DA		.001	.001	.004	.001	.000
	DB	.001		.000	.000	.000	.002
	DC	.001	.000		.000	.000	.001
	DD	.004	.000	.000		.000	.000
	DE	.001	.000	.000	.000		.000
	DF	.000	.002	.001	.000	.000	

a. Determinant = .019

Table 5.16: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.807
Bartlett's Test of Sphericity	Approx. Chi-Square	187.449
	Df	15
	Sig.	.000

CHI SQUARE TEST

Hypothesis:

1. **(H_0):** There is no association between the design and decor of office and the motivation of the employees towards their job performance.
2. **(H_1):** There is association between the design and decor of office and the motivation of the employees towards their job performance.

Table 5.1: Chi Square Table and Values

	Highly Motivating	Motivating	Least Motivating	Not Motivating	Row Total
Very Satisfied	4	6	1	0	11
Satisfied	1	17	9	1	28
Dissatisfied	0	0	1	2	3
Very Dissatisfied	0	0	0	0	0
Column Total	5	23	11	3	42

O	E	O-E	(O-E)2/E
4	1.30952381	2.69047619	5.527705628
1	3.333333333	-2.333333333	1.633333333
0	0.357142857	-0.357142857	0.357142857
0	0	0	0
6	6.023809524	-0.023809524	9.41088E-05
17	15.33333333	1.666666667	0.18115942
0	1.642857143	-1.642857143	1.642857143
0	0	0	0
1	2.880952381	-1.880952381	1.228059819
9	7.333333333	1.666666667	0.378787879
1	0.785714286	0.214285714	0.058441558
0	0	0	0
0	0.785714286	-0.785714286	0.785714286
1	2	-1	0.5
2	0.214285714	1.785714286	14.88095238
0	0	0	0
Calculated Chi Square Value			27.17424841

We have,
Table value of chi-square is: **16.919**
And
Calculated value of chi-square is: **27.17424841**
Since calculated value is greater than table value so we have to reject null hypothesis (H_0) and accept (H_1) by accepting that there is an association between the design and decor of office and the motivation of the employees towards their job performance.

FINDINGS:

The finding from the study to a considerable extent validates and brings to reality the widely accepted assumption presented in Leblebici (2012) that a better workplace environment motivates employees and produces better results.

The study demonstrated that office ergonomics deficiencies at the offices in this region which includes outdated office design and décor, inadequate office illumination, un-ergonomic office furniture, unsuitable office design and décor have variedly impaired the performance of an average employee by between 30 to 70 percent.

According to Beautyman (2006), businesses that ignore the design and layout of their workplaces are failing to optimize the full value of their human capital. The findings from the study confirm Beauty man's assertion in view of the fact that the office design and décor has impaired the performance of the average employee by between 30 to 70 percent. 72% employees were also of the opinion that current workplace environment does not seem to enhance employee performance and requires improvement.

"Practical Solution for a Safer Workplace (2002)" published by the Washington State Department for Labour and Industries observes that ergonomic improvements to the work environment primarily lead to a safer and more healthful work environment. The lack of office ergonomics improvements is known to predispose employees to safety and health hazards.

According to the Health and Safety Executive (HSE), 2007, failure to observe ergonomic principles may have serious repercussions, not only for individuals, but the whole organization. Much well-known work related accidents might have been prevented if ergonomics had been considered in designing the jobs people did and the systems within which they worked.

It emerged from the study however, that 28.0 percent of the respondents felt that their office environment had impacted negatively on their performance, while 14.0 percent actually confirmed having suffered an illness or lack of productive work due to the nature of their office environments.

The result shows that 46% people are satisfied with the statement that the design and décor of their office is general. And it can improve the performance of the employees if the design and décor of their offices is improved in a ways of comfort, flexibility and overall environment.

The findings from the study show that the current office layout in this area to some extent is outdated and inefficient office design prior to its modernization. The offices in Noida region experience underscores the need to design office ergonomically to ensure that the workplace environment suits employee needs, functions and enhances performance.

SUMMARY OF FINDINGS

Office ergonomics are a widely acceptable means of providing an enabling environment that best facilitates employees' performance and general productivity. The need for high office ergonomic standards is vital considering the fact that the type of employee work place environment impacts a great deal on employee collaboration, health and safety, morale, motivation and overall performance.

This study sought to discover the impact of office ergonomics on employee performance in the Noida region. The objectives of the study were to analyze the office design, finishes and furnishing of the offices in Noida region, to assess the impact of office ergonomics in the design, finishes and furnishing in terms of their suitability and comfort of the employees, to identify the impact of office ergonomics on employee health, safety and security and finally propose specific ergonomics based interventions that would address employee health, comfort and wellbeing and thereby enhance optimum performance.

Using random procedure and structured questionnaire as the main sampling and data collection tools respectively, responses were obtained from 50 employees for analysis. The data obtained were analyzed quantitatively using the SPSS and Microsoft Excel, and results presented through frequency distributions, pie charts, tables, and graphs. Pictures of unique offices showing office arrangement, seating arrangement, furniture etc. were also included for good visual effect.

The research identified considerable office ergonomics deficiencies which included less productive office design, uninspiring office décor, use of dark wooden partitions which has resulted in poorly illuminated offices, and the continuous use of un-ergonomic furniture at the offices in given area.

The study also confirmed that the ergonomic deficiencies have had varying adverse effects on the performance of employees and in some cases the health of employees. Ergonomic elements such as office design, décor, illumination and noise levels and furniture were found to be negatively affecting the performance of employees by between 30-70 percent. It also came to light that few employees had also face some problems like musculoskeletal disorders which they attribute to their furniture.

CONCLUSION AND RECOMMENDATIONS:

Conclusion

This study has assessed the impact of office ergonomics on the performance of employees operating in Noida region. The results from the study confirm that office ergonomics deficiencies at Noida region are impacting negatively on the performance of the employee.

From the findings of the study, which identifies substantial office ergonomics lapses such as inadequate office illumination, use of un-ergonomic furniture, appreciable noise levels and pockets of safety hazards, it is obvious that offices in this area are yet to leverage on its workplace environment as a means of motivating and enhancing the performance of employees.

Recommendations

In view of the findings and conclusion of the study, the following recommendations are made for consideration by offices in the given region as a

means of utilizing its workplace environment to motivate and enhance the performance of its employees.

The findings from the study clearly show that the design and décor of the offices is somehow deficient in ergonomics and has some negative impacts on the performance of employees. Given the state of the offices, any attempt to modernize the building will require a huge capital outlay and a considerable period of time. Against this backdrop, the study recommends the relocation of the office to a purpose-built office facility that integrates high standards of office ergonomics. With the help of a market survey, companies can identify alternative office facilities that will be most suitable for the operations and aspirations of the Corporation.

In the design and décor of the proposed new office building, emphasis should be made on the use of executive suites of open plan offices that inspires teamwork and collaboration. The open plan offices as reported in Hamilton et al. (1996) should be complemented with meeting rooms, breakout areas, isolated enclosed offices and other ancillary offices/facilities that will be essential to the peculiar operations of the offices. The new office should incorporate brighter office partitions with exciting colour schemes that will stimulate employees and help reduce stress levels.

The study further recommends that companies should undertake post-occupancy evaluation one year after occupation of the new office. The post-occupancy evaluation should involve the circulation of a multi-disciplinary questionnaire once a year among all employees to determine how the workplace elements such as furniture, illumination, noise levels etc. are affecting their performance. Based on the results of the survey, ergonomic adjustments should be made to render the workplace environment more supportive to employee performance.

The study further recommends that companies should develop and implement a Corporate Real Estate Policy that will focus on leveraging workplace environment to attract, retain and boost the performance of employees. The Policy should focus on modern ways and systems of working that optimizes employee delivery and productivity.

The study identified a number of health and safety concerns in the form of un-ergonomic furniture, poor illumination levels and poor cable management in selected offices leading to 42 percent of the respondents claiming not to feel safe and secured in their offices. The development and implementation of a health and safety policy to help identify and deal with health and safety hazards at offices is strongly recommended. Similarly, the adoption of enterprise risk management system to systematically identify risk factors in the office and pragmatically deal with them is further recommended by the study.

Since 72 percent people in this area say that their current workplace environment require improvement so this shows that the industry dealing in office ergonomics have a huge chances to expand their business by making new and creative marketing strategies.

Lastly, employees should be made to undergo periodic training on office ergonomics issues such as correct sitting posture, the right way to use and adjust computer monitor to avoid neck, back and eye strain, how to reduce stress and strains in repetitive work and how to avoid injury and disorders at the workplace. The training is expected to enlighten employees on the subject to help employees contribute meaningfully to the development of office ergonomics interventions.

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