ENVIRONMENTAL IMPACTS OF WORKING CONDITIONS IN PAINT FACTORIES WORKERS IN THE HASHEMITE KINGDOM OF JORDAN (FIELD STUDY)

D.Abdel Mutti Assaf

D.Ayyoub Alswalha

The Word Islamic Science & Education University, Jordan

Abstract

This paper attempts to analyze the factors that affect the internal and external environmental conditions on workers of the Jordanian paints factories, in terms of the degree of satisfaction with these conditions and their impact on the case of the general satisfaction of these institutions, As well as the impact on productivity and career on the state of job rotation. The results showed that there is a strong relation between these variables and employee satisfaction and stability, especially the case of the internal conditions, with minor variations among worker categories, but the effects on productivity were not strong. The empirical findings will certainly help both researchers and practitioners to integrate the internal and external environmental conditions on workers of the Jordanian paints factories In order to get a better understanding of the degree of satisfaction.

Keywords: Environment, environmental conditions, satisfaction, job rotation

Introduction

There is no doubt that the conditions of the natural environment in general, and other physical working conditions are considered of the most prominent factors that surround the daily lives of workers in the workplace, affect them directly, and finally , reflected in the degree of satisfaction on one hand and on the levels of performance on the other hand .

Many specialized studies have been conducted on working conditions, their variables, and their effects on the productivity of workers. Hawthorn Experiments, conducted in the mid-thirties of the last century, were part of the first and most prominent study in the field, which was turned by virtue of chance to study the impact of human relations on productivity, and to represent an important beginning in the transformation of Western

management thought as a whole from the traditional school of thought to the human relations school, then to behaviorism school.

Industrial enterprises in the Hashemite Kingdom of Jordan in general, and the paint industry in particular, have been Facing tangible problems , many of them relate to the nature of the physical work environment of these institutions , affect the Workflow on More or less. Most of these problems can be controlled if the responsible departments would give them the necessary attention, study, and discussion of the appropriate solutions.

The aim of this paper is to determine the factors that affect the internal and external environmental conditions on workers of the Jordanian paint factories, in terms of the degree of satisfaction. Through this aim will get the following objectives:

1. Determination of the degree of employee satisfaction with the conditions of the internal and external work environments.
2. Determine the extent of the impact of the internal and external environments conditions on the levels of employee general satisfaction with the institution in which they work.
3. Determine the extent of reflection of the internal and external environments conditions on worker productivity levels.
4. Determine the extent of reflection of the internal and external environments conditions of stability and job rotation.
5. Determine the cause of the deterioration of the working environment.

The rest of this paper is structured as follows. Section two introduces Review of related studies. Section three, present a research hypothesis and variable. Section four introduces the research methodology, finally, concluding is given.

Literature Review

In fact, work environment related issues have been prioritized in labor policy debates all throughout the industrialized nations. Improving the general work environment has been for instance a declared target of the European Union, as stated in the consolidated version of the Treaty establishing the European Community (Arrelano, 1991). Additionally, there are two types of work environment which are conducive and toxic work environments. Conducive work environment gives experience to employees and enable them to pleasurable actualize their abilities and behavior. This type of environment also reinforces self-actualizing behaviors. For instance, an irresponsible employee can change into a responsible employee in a conducive work environment. Toxic work environment gives unpleasant

experiences and at the same time, deactualize employees' behavior. This environment reinforces low self-actualizing behaviors and it leads to the development of negative traits of the employees' behavior(Kyko, 2005).

Clearly, the concept of suitable environment is well integrated into the environmental psychology literature. (Alexander, 1970; Herring, Szigeti, & Vischer, 1977; Preiser, 1983; Zeisel, 2005). Over the last decade, the ergonomic approach studies tools and equipment as well as workspace features as extensions of the human body. Those ergonomic features most frequently studied in workspace include lighting and daylighting, noise and noise control, and office furniture and spatial layouts in offices (Jacqueline, 2007).

Temperature conditions, as well as humidity and air flow, which greatly affect thermoregulation , of outdoor and indoor work are also important for patients with mood disorders, as thermoregulatory neurotransmitters and neurotransmitters of mood regulation overlap and weather and individual mood may be related (Boker,2008).

Lighting of the most important elements of the internal environment. Because most activities are directly related to the sense of sight . This environment will not be appropriate, no matter how good planning or quality furniture unless lit good and sufficient and stable. Lighting unstable causing waste of space in the headquarters staff, The beneficiaries will meet in the place, which they see as a stable lighting and leave the other (Smith ,1986:p163).

Lighting research has tended to distinguish between the effects on building occupants of artificial, interior lighting and of natural light or daylighting from windows. Daylighting research has linked increased comfort and productivity with window size and proximity, as well as with view out, control over blinds and shielding from glare (Hedge, 2000; Leather, Pyrgas, Beale, & Lawrence, 1998; Mallory-Hill, van der Voost, & Van Dortmost, 2004).

In their overview of the effects of different kinds of artificial lighting on task performance and occupant satisfaction, (Boyce, Veitch, Newsham, Myer, Hunter ,2003) concluded that current office lighting standards are preferred by most people carrying out typical office tasks in a simulated office environment, where workers used controls to exercise their lighting choices. The study results made a distinction between visual comfort—lighting needed to perform well on office tasks—and satisfaction, or lighting judged to be aesthetic

Exposure to noise is an important stressor and predicts irritability, somatic complaints, anxiety, and depression (Melamed, 1992).

Furthermore, although intense noise is difficult to bear for practically anyone, even mild or intermittent noise may affect certain vulnerable subjects with "noise annoyance" (the

emotional reaction to noise at exposure). Noise annoyance is associated with "noise sensitivity" (the physiological reaction to noise), an individual trait quite stable over time which may predict depression (Stansfeld, 1992).

Current studies of noise in offices have adapted techniques for measuring noise levels in industrial environments. Workers in open plan workspace tend to judge noise to be a primary source of discomfort and reduced productivity (Hedge, 1986; Oldham, 1988; Stokols & Scharf, 1990; Sundstrom, Herbert, & Brown, 1982)

Acoustic comfort studies have focused on correlating physical measures, such as signal-to-noise ratios at different densities, background noise levels and intensities, and speech intelligibility under differing physical conditions, with occupant judgements of distraction and annoyance (Ayr, Cirillo, & Martellota, 2001; Chu & Warnock, 2002; Mital, McGlothlin, & Faard, 1992). Efforts to control office noise through more absorbent surfaces, sound-masking systems and behavioral controls have been undermined by increasing office densities and collaborative work in modern workspace.

Perhaps the largest number of environmental psychology studies of workspace has focused on floor configuration and furniture layouts in the open plan office. Research indicates that these environmental factors have the greatest influence on worker satisfaction and performance (Brill, Margulis, & Konar, 1985; Hatch, 1987; Sullivan, 1990; Vischer, 1989).

Studies have tended to focus on the height and density of workstation partitions, the amount and accessibility of files and work storage, and furniture dimensions such as work surfaces as being these elements of furniture and spatial layout which have the most effect not only on the satisfaction of individual workers but on the performance of teams. One study indicated that the additional investment in ergonomic tables and chairs for workers yielded a 5-month payback in terms of increased productivity (Miles, 2000).

To gain a better understanding of the office workers, several studies provide evidence that office workers are uncomfortable in open plan configurations and prefer private enclosed workspace (Brennan, Chugh, & Kline, 2002; Fried, Slowik, Ben-David, & Tiegs, 2001; Ornstein, 1999). In addition, aspects of psychological comfort such as territoriality and privacy are strongly affected by spatial layout: office size and location is linked with status; partitioning influences acoustic as well as visual privacy; amount of office storage is linked with territoriality and status (Fischer, Tarquinio, & Vischer, 2004; McCusker, 2002; Vischer, 2005; Vischer, McCuaig, Nadeau, Melillo, & Castonguay-Vien,2003; Wells, 2000).

General hypotheses

1. State of the working conditions in the administrative offices is better than that in the factories.
2. Weakness of the degree of employee satisfaction with physical working conditions.
3. Inadequate working conditions, and in particular internal conditions, lead to poor employee satisfaction for the institution in which they work.
4. Weak degree of employee satisfaction for physical working conditions leads to poor productivity.
5. Weak degree of employee satisfaction for physical working conditions lead to instability and job rotation.
6. Lack of adequate attention from business owners to developing a suitable working environment.

Research variables

1. **Variables related to the internal environment (interior of the offices and factories)**

- illumination
- ventilation
- conditioning
- noise level
- pollution levels
- general cleanliness
- offices and workshops space

2. **Variables related to the external environment (outdoor)**

- the general location
- outdoor yards
- general cleanliness
- vehicles parks
- Location distance from employee residence
- Public transport
- Pollution

Research Methodology

The author examines in more details the research methodology that will be applied to this paper. Therefore, in this paper, the researcher has taken into account the research sample, Research tools, so as to verify the research aim.

The study relies primarily on the descriptive research methodology, and on the context- driven analytical methodology. All the internal environment variables were dealt with equally and; i.e., were not given proportional weights due the difficulties associated with measurement based on proportionality. It is true that dealing with the proportional weights will provide more accurate results, but it will create more unnecessary complications in the research process , taking into consideration that the study objectives are primarily concerned with providing a description of the situation in the factories that have been studied.

Research sample

The study was conducted on the two major paint firms. The sample included three category groups:

1. The administrators group, which included 18 personnel who represented the upper and the middle management.
2. Technical officials in the factories group which included 15 personnel
3. Factory workers group which included 72 personnel.

Research tools

The research base itself to a field study with questionnaire of the targeted people opinions that represented the research sample. The questionnaire was well-designed so as to gain robust data and defendable results. A measurement grade of 0 as minimum to 10 as maximum has been used.

4. The implications of the findings and result

Table (1) degree of personnel satisfaction with physical work conditions

Data	illumination	ventilation	conditioning	noise	Pollution	General cleanliness	work space	general avg.
Administrative staff	9	9	8	8	7	8	7	8
Tech. officials	9	7	7	7	5	7	6	6.9
workers	8	6	6	4	3	6	5	5.4
Avg.	8.66	7.33	7.00	6.33	5.00	7.00	6.00	6.7

Referring to Table 1, It can be noticed from the results that:

1. There is a gap between the personnel regarding the degree of satisfaction; while the percent satisfaction reaches almost 80 % amongst the administrators, it is close to 69 % amongst the technical officials, and as low as 54 % amongst workshop workers, which indicates a degree of bias that relates concern on work conditions in parallel with the authority pyramid. Such bias alarms a state of negative impacts on the vertical relations atmosphere within these institutions to the degree of threatening stability factors. It is strongly recommended that higher authorities of these institutions solve the issue before it turns a devastating tool within the institution.
2. The degree of general satisfaction with the internal work conditions has reached 67 % , which is an acceptable degree to a certain level , despite the variation in the degree of satisfaction from work condition to another , especially among workshop personnel .Of the most notable , the low degree of satisfaction with the concerning levels of pollution .Therefore , we should extend our interest beyond the misleading general avg. of satisfaction state which detracts attention away from the deterioration in some of the factors that have non negligible daily effects .

Table (2): Determination of internal work condition effects on personnel general satisfaction with the institution

Data	Illumination	Ventilation	Conditioning	Noise	Pollution	Gen. cleanliness	Work space	Avg.
Administrators	4	4	5	4	6	4	3	4.3
Tech officials	5	4	5	5	8	4	3	4.9
Workers	4	6	5	5	8	6	3	5.3
Avg.	4.33	4.66	5	4.66	7.33	4.66	3	4.9

Referring to Table 2, It is noticed that:

1. Work condition has its moderate effect on the state of the general satisfaction from all the personnel which has a percentage of 49%. it is clear the percentage raises and lowers according to the degree of the feeling of the worseness of the conditions ; it the lowest with 43 % at the administrators group who enjoy better work conditions , while it is highest in the workers group work in clumsy conditions in the workshops.
2. Work conditions seem more dangerous and critical to life like pollution and general cleanliness seem the most effective in shaping personnel views and their state of satisfaction compared with the other conditions. This indicates a spotlight to an important issue that should be well treated before it poses a costly threat to health of the personnel.

Table (3): work conditions effect on personnel productivity

Data	Illumination	Ventilation	Conditioning	Noise	Pollution	Gen. cleanliness	Work space	Avg.
Administrators	3	3	5	3	5	3	3	3.6
Tech officials	4	6	6	5	7	5	4	5.3
Workers	4	6	6	6	8	6	4	5.7
Avg.	4.66	5	5.66	4.66	6.66	4.66	3.66	4.9

Referring to Table 3, It can be noticed from the table data that:

1. Working conditions have its effects on all the personnel groups with an average of 49% , 36 % in the administrators group , 53 % in the technical officials group and 57 % among workers .This can be attributed to that the administrators have much better working conditions than the other two groups which result in their feeling of the conditions considering them normal , in contrast to the daily suffering of others , especially workshop personnel .

Table (4) degree of internal work conditions effects on the state of job rotation among the personnel

Data	Illumination	Ventilation	Conditioning	Noise	Pollution	Gen. cleanliness	Work space	Avg.
Administrators	3	3	3	3	5	3	3	3.3
Tech officials	4	6	6	5	8	5	4	5.4
Workers	4	6	6	6	9	7	4	6
Avg.	3.66	5	5	4.66	7.33	5	3.66	4.9

Referring to Table 4, it can be noticed that there is a tangible effect of internal work conditions on the degree of personnel stability and job rotation, especially the technical officials and workers with 49 % and 60 % respectively. It is true the administrators are less affected, but attention should be paid to the high percentage of the two other groups.

Table (5) personnel degree of satisfaction with the external conditions environment

Data	Illumination	Ventilation	Conditioning	Noise	Pollution	Gen. cleanliness	Work space	Avg.
Administrators	7	7	7	8	7	8	8	7.4
Tech officials	7	7	7	7	6	8	8	7.1
Workers	7	7	7	6	5	7	7	6.5
Avg.	7	7	7	7	6	7.33	7.33	7

Based on table 5, shoes that:

1. External work conditions have gained tangible acceptance and better than that of the internal conditions. Also there a substantial convergence in views among all personnel with satisfaction degree of 70 %
2. There are no variations among all the different conditions of the environment in terms of the degrees of satisfaction ; indeed , there is a substantial correspondence a among all the groups .

Table (6) the effect of external work conditions on personnel satisfaction levels with the institution

Data	General location	Yards & gardens	Parking	Residence distance	Pollution	Gen. cleanliness	Transportation	Avg.
Administrators	4	3	4	4	6	6	2	4.1
Tech officials	3	2	3	5	7	5	4	4.3
Workers	3	3	2	5	6	4	4	3.9
Avg.	2.33	2.66	3	4.66	6.33	5	3.33	4.1

From Table 6, data show the weak effect of the external work conditions on the state of personnel general satisfaction , with a high degree of correspondence among the personnel groups regarding this issue.

Table (7) effect of the external environment on personnel productivity

Data	General location	Yards & gardens	parking	Residence distance	Pollution	Gen. cleanliness	Transportation	Avg.
Administrators	1	2	1	2	4	3	1	2
Tech officials	2	2	1	2	5	5	2	2.7
Workers	1	1	1	3	6	4	2	2.6
Avg.	1.33	1.33	1.33	2.33	5	4	1.66	2.3

Referring to Table 7, shows the weak effect the external environment condition has on all personnel productivity and that high correspondence between their views, and the only exception is their views regarding the pollution variable which relates the general environment of manufacturing .Such high alert regarding pollution brings about the administration and technical arrangements for expeditious and highly technical remedy of the problem, regardless of the financial cost.

Table (8) effect of the external environment on personnel stability and job rotation

Data	General location	Yards & gardens	parking	Residence distance	Pollution	Gen. cleanliness	Transportation	Avg.
Administrators	1	2	1	2	4	3	1	2
Tech officials	2	1	1	2	6	5	1	2.6
Workers	1	1	1	3	6	4	2	2.6
Avg.	1.33	1.33	1.33	2.33	5.33	4	1.33	2.4

Referring to Table 8, shows the external environmental conditions effect on states of stability and job rotation is highly weak among all the personnel with 24 % percentage on average and with 20% minimum among administrators. Such percentages could have turned less had pollution and general cleanliness issues been well- handled.

Table (9) major reasons of work conditions deterioration

Data	Senior management lack of problem sensing	S.M lack of Tech capabilities	S.M lack of financial capabilities	S.M ignorance	Personnel lack of cooperation	Average
Administrators	5	7	7	6	6	6.2
Tech officials	4	6	3	7	3	4.6
Workers	3	5	2	9	3	4.4
Avg.	4	6	4	7.3	4	5.1

Finally, Referring to Table 9, shows that there is some variation in the views of the different groups regarding the reasons of some work conditions deterioration especially the internal ones, but almost fingers of all personnel point the senior managements of these institutions with accusations of ignorance and lack of interest in developing more appropriate conditions, at the higher 73 % average percentage, which is rockets much higher with 90% among workshop personnel. These people refuse senior managements justifications of the lack of capabilities especially the financial ones with among tech official and worker 30% and 20 % refusal percentage respectively.

The relation between factors that affect of the internal and external environmental conditions on workers of the Jordanian paint factories, in terms of the degree of satisfaction was confirmed in this study and the findings are summarized as follows:

1: correlated with the satisfaction of all the groups of personnel with the internal environment work conditions.

2: Determination of internal work condition effects on personnel general satisfaction with the institution.

3: it is correlated with the effect of physical work conditions on personnel productivity .

4: determination of the degree of internal work conditions effects on the state of job rotation among the personnel.

5: correlated with all personnel levels of satisfaction with the external work condition environment.

6: determine the effect of external work conditions on personnel satisfaction levels with the institution.

7: determination effect of the external environment on personnel productivity.

8: determination of effect of the external environment conditions on personnel stability and job rotation.

9: determination of reasons of deterioration in some work conditions, especially the internal ones.

Conclusion

The follow-up of different results - which objectives of the study and hypotheses were centered around- has shown the nature of the internal and external environmental conditions that surround the lives of institutions surveyed, and the lives of their employees. It has also shown the nature of the implications of these conditions and their impacts on levels of all employees' satisfaction, on their levels of productivity and final career stability. Most

research hypotheses have been confirmed, taking into consideration the variations in views highlighted by the results among categories of personnel, among the effects of internal and external environments conditions and among the effects of conditions within a single environment. The results have also shown some of the reasons that prevent overcoming some weaknesses on certain environmental conditions and that good results can be achieved with more attention from senior management. Hopefully, these findings will shed some light for senior management allowing them to understand the nature of the internal and external environmental conditions.

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