Workplace Ergonomics and Academic Staff Performance in College of Education in Umm Al-Qura University in Makkah

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Abstract The relationship between workplace ergonomics (Temperature, furniture arrangement, facilities, lighting, noise, equipment) and academic staff performance in Umm Al-Qura University (UQU) at Makkah is the aim of this study. Study sample consisted of (154) academic staff at the College of Education in UQU. The descriptive relational approach was used to detect the level of workplace ergonomics satisfaction and employee’s performance. Moreover, a survey has been used to collect data for formulating) information. At the end of this study, the study concluded that the workplace ergonomics satisfaction level was medium. The performance level of academic staff at the College of Education in UQU, regarding the workplace ergonomics is high. Finally, there is no statistical significance difference regarding the correlation coefficients of workplace ergonomics satisfaction relationship with its dimensions and academic staff performance according to gender.

Keywords: workplace, ergonomics, performance, academic staff performance

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1. Introduction

Indoor workplace environment may shape fifty percent of time spent by most people, which by its turn greatly influences their mental status, actions, abilities and performance. Consequently, better outcomes and increased productivity are assumed to be the outcomes of better workplace environment [1].

Over the last decade, the change in organizational work patterns and expectation of employees gave rise to the development of new working practices. The changing nature of work resulted in increasing demand of better workplace as an attractive physical asset that responded to the requirement of creative knowledge workers [2]. In order to achieve this competitive environment, some strategic decisions are required by management to improve performance. Developing a working system that will fit the job to the employee is an example of these decisions. This innovative management strategic decision is known as ergonomics [3].

According to International Ergonomics Association [4] Ergonomics is the scientific discipline concerned with the understanding of interactions among humans and other elements of a system. It is the profession that applies theory, principles, data and methods to design in order to optimize human well-being and overall system performance.

In the higher education sector where most of occupants are knowledge workers; the idea of creating a high-performance workplace is very important, which has been developed in many universities [5].

The ergonomics influence among academic staff in UQU has not been explored, nor discovered yet. Therefore, this study would identify the relationship between workplace ergonomics and academic staff performance at the college of education in UQU in Makkah.

2. Research Problem

For better understanding of the effect of jobs, it is important to learn about links among job performance, people, and situation factors. Job performance is a very considerable factor influencing the profitability of any organization [6]. Therefore, the performance of an employee can be affected by many factors such as colours around, lights combination and sitting arrangement [7].

Ergonomics is known as a science concerned with the fit 'between people and their work. It puts people first, taking account of their capabilities and limitations. Moreover, Hameed and Amjad [1] suggested that an organization could enhance its productivity by improving workplace design. Furthermore, Ergonomics aims at being sure that tasks, equipment, information and environment fit each worker. The level of motivation of an employee is correlated with working environment and commitment...
towards his job [8]. Further researches are required to examine the areas of ergonomic in UQU to show how ergonomic impacts work conditions and ultimately influences academic staff performance.

2.1. Research objective

This study aims to examine the relationship between workplace ergonomics (Temperature, furniture arrangement, facilities, lighting, noise, equipment) and academic staff performance in UQU at Makkah.

2.2. Research Questions

The main research questions are:

1. What is the level of workplace ergonomics satisfaction of the academic staff in the College of Education in UQU, from their point of view?
2. What is the performance level of academic staff in the College of Education in UQU related to their environment, from their point of view?
3. Is there any statistically significant correlation at level (α=0.05) for the satisfaction of workplace ergonomics in the College of Education with the performance of academic staff at the UQU?
4. Are there any statistically significant differences at level (α=0.05) between the correlation coefficients of satisfaction relationship of the workplace ergonomics and the performance of academic staff, in the College of Education in UQU due to the (gender, age, and academic rank)?

2.3. Significance of the Study

People are the most valuable resource of an organization, and that the management of people makes a difference to company performance [9]. Since employees are the eventual user of the workplace environment, the employer should consider designing and equipping the workplace settings to suit employee comfort. The physical environment shall be designed to appeal and inspire employee who works within the premise [10]. Recently, the workplace environment has attracted the researchers around the world. To achieve high levels of employee productivity, organizations shall ensure that the workplace environment is conducive to organizational needs facilitating interaction, privacy, formality, informality, functionality and cross-disciplinarily. Consequently, the environment is a tool that can be leveraged to improve business results [11]. Extensive scientific research conducted by Roelofsen [12] has also concluded that improving working environment resulted in a reduction of complaints, absenteeism and an increase in productivity. According to Kroemer [13], office ergonomics hubs human-centred work design which requires understanding employees’ capabilities, well-being and preferences.

2.4. Limitations

This study

• has been conducted in the college of education
• has examined the relationship between workplace ergonomics and academic staff performance.

• sampled all the academic staff,
• was conducted in Spring of 2019.

2.5. Definitions

Ergonomics: is the design of the workplace, equipment, machine, tool, product, environment and system, taking into consideration the human’s physical, physiological capabilities and optimizing the effectiveness and productivity of work system while assuring the safety, health and wellbeing of the workers [14].

Employees performance: is a group of administration behaviours which express how the employee performs his job with high quality of performance, good implementation, the technical experience of the job, communicational interaction with other organization staff members, and the commitment of the administrative rules which organize his job and [15] upgrade it to better response carefully [16].

3. Literature Review

3.1. Workplace Ergonomics

According to the Occupational Safety and Health Academy [15], ergonomics involves the design of workstations, work practices and workflow to fit the employees’ capabilities. It also involves a design that reduces risk factors that may contribute to common work-related injuries and illnesses, such as sprains, strain and cumulative trauma disorders (CTDs).

Ergonomics is also expressed as a holistic approach in which considerations of physical, cognitive, social, organisational, environmental and other relevant factors are considered to enhance the design and evaluation of tasks, jobs, products, environments and systems in order to make them compatible with the needs, abilities and limitations of employees [4]. This new concept also shows that ergonomics is not limited to the improvement of individual employee alone but an improvement in organisational performance at all. Workplace environment may give an impression over the working environment, as one enters the building, it may also boost or decreases staff reaction. The poor productivity, quality, and accidents resulted from human error, are directly attributed to poor ergonomics [17]. This paper highlights on organizational ergonomics and focuses work environment fit considering more precisely the six-environmental factors including temperature, furniture arrangement, facilities, lighting, noise, and equipment.

3.2. Temperature

Good room temperature increases productivity and reduces workers stress. It plays a notable and effective role in the workplace environment. Effective temperature indicates how hot or cold our environment really makes us feel [18]. High temperature can affect employee’s performance, particularly those one depending on cognitive, physical, and perceptual duties [19].
3.3. Furniture Arrangement

In organizations, where workplace situations are monotonous and arduous, health conditions especially neck, shoulder, backbone and hands are the major problems that employee experience is his/ her work [20]. Sitting arrangement or comfortable furniture in a workplace has a serious impact on user's health [21].

3.4. Facilities

Workplace facilities affect employees work and his satisfaction. They play a vital role in the workplace environment. Employee facilities should be clean, well maintained and attractively presented [22].

3.5. Lighting

To build a comfortable workplace design, lightning has a critical role. It can affect the performance of employees depending upon its condition [23].

3.6. Noise

Noise as the unwanted sound is the most common complaint in offices workplace. The level of noise greater than 85dB has a negative impact on the performance and proved to be a strategic indicator for performance improvement [24].

3.7. Equipment

Office equipment such as computers, printers, photocopiers, plotters, etc have increasingly become the basic job tools for enhanced performance in the corporate world [25].

3.8. Performance of Employees'

The outcome of a person or group work in an organization at a time which reflects how well they reach a job qualification in order to achieve organization’s goal is known by performance. Many factors could influence employee’s job performance including but not limited to equipment, physical work environment, meaningful work, standard operating procedures, a reward for good or bad systems, performance expectancy, feedback on performance, in addition to knowledge, skills and attitudes [26]. Every organization seeks highly performing individuals in order to ensure competitive advantage and achievement of corporate goals. Therefore, high employee performance is considered one of the critical determinants of the level of organizational productivity and accomplishments [27].

3.9. Literature Review

Gensler [28] showed how well-designed office is key element for improving employee performance in random and representative sample of 2,013 office workers in all staff and management strata in the U.S. The survey findings suggested that businesses that ignore the design and layout of their workplaces failed to optimize the optimum value of their human capital. Moreover, the survey conclusion demonstrated a link between the physical office and work processes such as innovation, collaboration, and creativity. The results showed that overwhelmingly importance of good workplace design for employee satisfaction.

Hameed and Amjad [1] studied the impact of office design on employees’ productivity. The main objective of his study is to find out the relationship between office design and productivity. For this purpose, a sample of 21 out of 31 bank branches in Abbottabad, Pakistan, was taken to conduct the study. Sample size was a number of 105 employees in these 21 branches. Primary data was collected through a structured questionnaire. The observation was also used to collect information about office design. The findings of this study showed that office design is very vital in terms of increasing employees’ productivity. Comfortable and ergonomic office design motivates the employees and increases their performance substantially.

Amir [29] measured the impact of office environment on employee’s performance level in the private sector of Pakistan. The cross-sectional primary data with a sample size of 94 have been collected through verified questionnaire from employees of different private organizations of Pakistan.

Findings of the research showed that there is a strong positive significant relationship between the performance of private sector office employees and the environmental elements.

Bridger [30] studied how to increase productivity as office design business leaders are being urged to take more account of the links between good workplace design and improved business performance. According to the findings of this new research, the impact of office design on business performance, expressed the revolution taking place nowadays in the office environment, as the traditional workspace leaves a space for social and interactive engagement. The report showed that office design influences a range of critical factors to business performance, including staff attraction, motivation, retention, staff satisfaction, knowledge, skills of staff, innovation and creativity, responsiveness to business and technological change, customer attraction and retention.

Newsham, Brand et al [31] studied the link between indoor environment conditions and organizational productivity. Questionnaire data were collected from 95 workstations at an open-plan office building in Michigan, USA. The physical measurements encompassed thermal, lighting, acoustic variables, furniture dimensions, and an assessment of potential exterior view. Results confirmed the important role of window access at the desk in relation with lighting, particularly through its effect on the satisfaction with outside view.

According to Carmen [32], the workplace design considerations include thermal comfort which indicates the right combination of temperature, airflow and humidity. A combination of these elements is required for physical comfort in the workplace. Good indoor environmental quality starts with a well-designed lighting system, which involves more than just providing windows and incandescent lighting. Lighting has enormous potentials for influencing occupant perception of the interior space.
4. Study Methodology

The descriptive relational approach was used to detect the level of workplace ergonomics satisfaction, employee’s performance at the College of Education in UQU, according to academic staff point of view.

4.1. Study Population

The study population consists of (298) academic staff at College of Education in UQU, from the records of human resources department, during the second semester of (1439/1440) academic year.

4.2. Study Sample

The study sample consists of (154) academic staff by (52%) of study population at the College of Education in UQU, since study population size is relatively small, as shown in Table 1.

Table 1. Distribution of study respondents

| IV & Levels of it | Frequency | % |
|------------------|-----------|---|
| Gender           |           |   |
| Male             | 73        | 47.4 |
| Female           | 81        | 52.6 |
| Total            | 154       | 100  |
| Age              |           |   |
| From 26 to 35 years | 36      | 23.4 |
| From 36 to 45 years | 61      | 39.6 |
| From 46 to 60 years | 57      | 37.0 |
| Total            | 154       | 100  |
| Academic Rank    |           |   |
| Instructor       | 32        | 20.8 |
| Assistant Professor | 63      | 40.9 |
| Associate Professor | 35      | 22.7 |
| Professor        | 24        | 15.6 |
| Total            | 154       | 100.0 |

4.3. Data Collection Instruments

In order to achieve study objectives; the following two instruments were used:

4.3.1. Academic Staff Satisfaction of Workplace Ergonomics at the College of Education in UQU

In order to observe the satisfaction of workplace ergonomics at College of Education in UQU, according to the academic staff point of view; a special instrument was developed in this study by reviewing the previous studies, such as [33]. The instrument in its initial copy consisted of (25) questions divided into over five dimensions: temperature items between (1) and (5), furniture arrangement between (6) and (10), facilities between (11) and (15), lighting between (16) and (20), and finally the noise between (21) and (25). (Appendix A).

a. Content Validity.

The Content of the workplace ergonomics according the academic staff point of views at College of Education in UQU, was verified by distributing it on a group of arbitrators that contain three academics with high academic ranks (Associate Professor & Assistant Professor) who have the experience and competence in the field of Educational administration in UQU (Appendix B), in order to give their opinions about the accuracy and validity of instrument content.

All the arbitrators comments and suggestions were taken into consideration (Appendix C); where the language formulation of the following ten items were modified: (3, 4) in the temperature dimension, (6, 8 &10) in the furniture arrangement dimension, items (11, 14) in the facilities dimension, (16, 20) in the lighting dimension, and article (23) in the noise dimension. Where it appears in the initial study instrument form, while the following fifteen items are kept without modification: (1, 2 &5) in the temperature dimension, (7, 9) in the furniture arrangement dimension, (12, 13 &15) in the facilities dimension, (17, 18, 19) in the lighting dimension, and (21, 22, 24 & 25) in the noise dimension, where it appears in the initial study instrument form.

Therefore, the number of instrument items are kept in its final form after the arbitration to contain (25) items, which were distributed and spread over the following (5) dimensions: temperature dimension items between (1) and (5), furniture arrangement, items between (6) and (10), facilities dimension, items between (11) and (15), then lighting dimension, items between (16) and (20), and finally noise dimension which has five items between (21) and (25). (Appendix D).

b. Instrument Formulation Validity

Study instrument was implemented on pilot sample that consisted of (20) employees at the College of Education in UQU from outside the targeted study sample, in order to calculate the Corrected Correlation Coefficients values for items relationship with the study instrument and its dimensions; where the Corrected Correlation Coefficients values for the temperature items and its dimension were between (0.44) and (0.87) in study instrument between (0.42) and (0.68), while the Corrected Correlation Coefficients values for the furniture arrangement items and its dimension were between (0.74) and (0.87) with study instrument between (0.83) and (0.73), and the Corrected Correlation Coefficients values for the facilities items and its dimension were between (0.57) and (0.85) with study instrument between (0.51) and (0.75), but the Corrected Correlation Coefficients values for the lighting items and its dimension were between (0.62) and (0.81) with study instrument between (0.48) and (0.67), and finally the Corrected Correlation Coefficients values for the noise items and its dimension were between (0.88) and (0.94) with study instrument between (0.71) and (0.76).

As shown in (Appendix E) and noticed from the above values; the formulation validity that Corrected Correlation Coefficients values for the item’s relationship with the study instrument and its dimensions weren't below the criterion (0.20), which verify the quality and validity of study items instrument formulation. [34]

Pearson Correlation Coefficients were calculated for the study instrument relationship with its dimensions, where its value ranged between (0.75) and (0.82), in addition to calculating the Pearson Intra-Correlation Coefficients for the dimension relationship with each other, where its value ranged between (0.41) and (0.68), as shown in (Appendix F).
c. Study Instrument Reliability

For the purposes of calculating the internal consistency of study instrument and its dimensions, Cronbach's Alpha (α) formula was used on the first test data of the pilot sample, where its instrument value amounted to (0.95) and its instrument dimensions' values ranged between (0.85) and (0.97). For the purpose of calculating the consistency of repetition, the Test-Retest method of the study instrument and its dimensions has been used with an interval of two weeks between the first and second tests; Pearson Correlation Coefficient of the relationship between the first and second tests of the pilot sample, where its value of the instrument amounted to (0.81) and its instrument dimensions' values ranged between (0.82) and (0.86), as shown in (Appendix g).

d. Instrument Correction Criterion

The final form of satisfaction level instrument of workplace ergonomics consisted of twenty-five questions ranged by the Likert fifth instruments, which include five degrees [strongly agree and given at the correction instrument (5), agree and given at the correction instrument (4), neutral and given at the correction instrument (3), disagree and given at the correction instrument (2), and finally strongly disagree and given at the correction instrument (1)].

4.3.2. Performance Instrument

In order to detect the performance level of academic staff regarding their environment, a special instrument was developed for this study by viewing the previous studies related to the performance of employees such as [35,36], and the instrument in its initial form consisted of six items (Appendix H).

The Validity & Reliability Indications of academic staff Performance Instrument.

a. Content Validity

The Content of the academic staff performance level instrument at College of Education in UQU, was verified by distributing it on a group of arbitrators that contain three academies with high academic ranks (Associate Professor & Assistant Professor) who have the experience and competence in the field of Educational administration in UQU (Appendix B), in order to give their opinions about the accuracy and validity of instrument content.

All the arbitrators comments and suggestions were taken into consideration (Appendix I), where the items (4 & 6) were deleted, as shown in the initial form of study instrument and added the items (5, 6 & 7) as shown in the final form of study instrument, four items (1, 2, 3, 5) are kept without modification as shown in the initial form of study instrument, therefore the number of instrument items at its final form, after the arbitration to become seven items (Appendix J).

b. Instrument Formulation Validity

Study instrument was implemented on pilot sample that consists of (20) employees at the College of Education in UQU from outside the targeted study sample, in order to calculate the corrected correlation coefficients for the items relationship with the study instrument; where the corrected correlation coefficients values for the relationship of instrument questions with the instrument ranged between (0.69) and (0.88), as shown in (Appendix K). It noticed from above values, related to the instrument formulation Validity that corrected correlation coefficients values for the items relationship with the study instrument wasn't below the criterion (0.20), which verify the quality and Validity of study items instrument formulation [34].

c. Study Instrument Reliability

For the purposes of calculating the internal consistency of study instrument, Cronbach's Alpha (α) formula was used by depending on the first test data of the pilot sample, where its instrument value amounted to (0.94), and for the purpose of calculating the consistency of repetition through the Test-Retest method of the study instrument, with an interval of two weeks between the first and second tests; Pearson Correlation Coefficient of the relationship between the first and second tests of the pilot sample, where its value of the instrument amounted to (0.87).

4.4. Study Variables

The questionnaire included the following variables:

A. Independent Variables; which are represented in the following:

1. Gender, with two categories: (Male, Female).
2. Age, with three levels (26-35 years, 36-45 years, 46-60 years).
3. Academic rank, with four levels (teacher, assistant professor, associate professor, professor).

B. Dependent Variables; which are represented in the following:

1. The satisfaction level of workplace ergonomics among the academic staff at the College of Education in UQU.
2. The performance level of academic staff regarding their environment at the College of Education in UQU.

4.5. Statistical Analysis

Statistical analyses were done on the study data by using the Statistical Package for Social Sciences (SPSS).

5. Discussion of the Results

First: results related to the first question of the study: "What is the level of workplace ergonomics satisfaction among the academic staff at the College of Education in UQU, from their point of view?"?

To answer this question, the arithmetic means, and standard deviations were calculated for the workplace ergonomics satisfaction, and its dimensions at the College of Education in UQU, according to the academic staff point of view, regarding the order of workplace ergonomics dimensions, as shown in Table 2.
Table 2. Arithmetic means and standard deviations for the workplace ergonomics satisfaction, and its dimensions, from the academic staff points of view, in a descending order

| Rank | ID  | Workplace ergonomics and its Dimensions | Mean | Std. Dev. | Degree |
|------|-----|----------------------------------------|------|-----------|--------|
| 1    | 5   | Noise                                  | 3.82 | 0.92      | High   |
| 2    | 3   | Facilities                             | 3.75 | 0.77      | High   |
| 3    | 4   | Lighting                               | 3.39 | 0.72      | Average|
| 4    | 2   | Furniture Arrangement                  | 3.26 | 0.89      | Average|
| 5    | 1   | Temperature                            | 3.08 | 1.00      | Average|
|      |     | Whole Instrument                       | 3.46 | 0.68      | Average|

Table 2 shows that the workplace ergonomics satisfaction level, and its dimensions at the College of Education in UQU, according the academic staff point of view was average, where the workplace ergonomics dimensions came according to the following order: noise dimension came first within high satisfaction level, then facilities dimension came second within also a high satisfaction level, the lighting dimension ranked third within an average satisfaction level, the furniture arrangement dimension came in fourth place within also an average satisfaction level, and finally, the temperature dimension came in the last place within also an average satisfaction level. This can be explained that the faculty office is in a quiet place, therefore, they can complete their daily tasks easily. Moreover, the researcher explained that temperature came in the last level because the temperature is cold in the education college which may bother some of them. This finding is consistent with Gensler study [28] which found the importance of good workplace design for employee satisfaction. On the other hand, this result differs from Newsham, Brand et al [31] study as their results confirmed the important role of window access at the desk in satisfaction with lighting, particularly through its effect on satisfaction with outside view.

Second: results related to the second question of the study: "What is the performance level of academic staff at the College of Education in UQU regarding their environment, according the academic staff point of view?"

To answer this question; the arithmetic means, and standard deviations were calculated for the performance level of academic staff, at the College of Education in UQU and its questions from the academic staff point of view, as shown in Table 3.

Table 3 shows that the performance level of academic staff at the College of Education in UQU, according the academic staff point of view, was high according to the classification criterion of arithmetic means and classified within the following two satisfaction levels: high for questions number (7, 6, 4, 5, 1, 2) according to the occurrence, and moderate for question number (3). This can be explained that the university administration tries to provide a good working environment for its members. This finding is consistent with [37].

Third: results related to the third study question: "Is there a statistically significant correlation at level (α=0.05) for the satisfaction of workplace ergonomics at College of Education with the performance of academic staff at the UQU?"

To answer this question; Pearson Correlation Coefficients were calculated for the satisfaction relationship of workplace, Is there a statistically significance correlation at level (α=0.05) for the satisfaction of workplace ergonomics at College of Education with the academic staff performance in UQU?, and its dimensions with the performance of academic staff at the College of Education in UQU, according the academic staff point of view, as shown in Table 4.

Table 4 shows that Pearson Correlation Coefficients for the satisfaction relationship of the workplace environment, and its dimensions with the performance of academic staff at the College of Education in UQU, from their point of view have been classified according to the criterion [38], as follows:

- Statistically significant high positive relationships at level (α = 0.05); two correlations out of six between the satisfaction of workplace ergonomics and its noise dimension, on the one side and the academic staff performance on the other side, at the College of Education in UQU, from their academic staff point of view.
- Statistically significant average positive relationships at level (α=0.05); four correlations out of six between the satisfaction of workplace ergonomics dimensions (temperature, furniture arrangement, facilities, lighting), on the one side and the academic staff performance on the other side, at the College of Education in UQU, from the academic staff point of view.

This also can be explained that the university administration tries to provide a good working environment for its members.

Fourth: results related to the fourth study question: "Are there any statistically significant differences at level (α=0.05) between the correlation coefficients of satisfaction relationship about the workplace ergonomics and the performance of academic staff, at the College of Education in UQU due to the (gender, age, and academic rank)?"

To answer the fourth question of the study; Pearson Correlation Coefficients was calculated for the satisfaction relationship of workplace ergonomics and its dimensions with the academic staff performance, at the College of Education in UQU, from their points of view according to gender, then convert it to the corresponding Fisher's Z values, and then reveal the statistical significance of equation difference results between the two Fisher's Z values of the Correlation Coefficients of workplace ergonomics satisfaction relationship and its dimensions with the academic staff performance, at the College of Education in UQU, from the academic staff points of view according to gender, as shown in Table 5.

Table 5 shows that there is no statistically significant difference at level (α = 0.05) between Fisher's Z values, for the Correlation Coefficients of workplace ergonomics satisfaction relationship, and its dimensions with the academic staff performance at the College of Education in UQU, from the academic staff point of view according to gender.

Pearson Correlation Coefficients was also calculated for the satisfaction relationship of workplace ergonomics, and its dimensions with the academic staff performance at the College of Education in UQU, from their point of view according to age, and then convert it to the corresponding Fisher's Z values, and then reveal the statistical
significance of equation statistical results between Fisher’s Z values of the correlation coefficients for workplace ergonomics satisfaction relationship, and its dimensions with the academic staff performance at the College of Education in UQU, from the academic staff point of view according to age, as shown in Table 6.

Table 3. Arithmetic means and standard deviations for the performance of academic staff

| Rank | ID | Academic staff Performance | Mean | Std. Dev. | Degree |
|------|----|-----------------------------|------|-----------|--------|
| 1    | 7  | My workplace environment affects my productivity | 3.88 | 0.95 | High |
| 2    | 6  | My workplace environment enhances my motivation | 3.79 | 0.97 | High |
| 3    | 4  | My workplace environment encourages me to work efficiently | 3.78 | 0.97 | High |
| 4    | 5  | My workplace environment boosts my creativity | 3.77 | 1.00 | High |
| 5    | 1  | My workplace environment helps me to complete my daily tasks easily | 3.75 | 1.04 | High |
| 6    | 2  | My workplace environment helps me to complete my daily tasks on time | 3.75 | 1.05 | High |
| 7    | 3  | I am satisfied with my workplace environment | 3.42 | 1.15 | Moderate |

Whole Instrument | 3.73 | 0.87 | High |

Table 4. Pearson Correlation Coefficients values for the satisfaction relationship of workplace ergonomics, and its dimensions with the performance of academic staff.

| Correlation Between | Academic staff Performance | Classification of Correlation Power |
|---------------------|-----------------------------|------------------------------------|
| Temperature         | 0.363                       | average                            |
| Furniture Arrangement | 0.445                      | average                            |
| Facilities          | 0.467                       | average                            |
| Lighting            | 0.410                       | average                            |
| Noise               | 0.521                       | High                               |
| Workplace Environment | 0.557                     | High                               |

* p ≤ 0.05.

Table 5. Equation difference results between the two Fisher’s Z values of the Correlation Coefficients of workplace ergonomics satisfaction relationship and its dimensions with the academic staff performance.

| Gender | Academic staff Performance | Diff. in Z | Sig. |
|--------|----------------------------|------------|------|
| Temperature |                            |            |      |
| Male    | 0.46                       | 0.23       | 36   | 0.23 | 0.26 | 0.80 |
| Female  | 0.42                       | 0.45       | 81   |      |      |      |
| Furniture Arrangement | 0.39               | 0.41       | 73   |      |      |      |
| Male    | 0.53                       | 0.59       | 81   |      |      |      |
| Female  | 0.54                       | 0.61       | 81   |      |      |      |
| Facilities |                            |            |      |      |
| Male    | 0.38                       | 0.40       | 73   |      |      |      |
| Female  | 0.54                       | 0.61       | 81   |      |      |      |
| Lighting |                            |            |      |      |
| Male    | 0.46                       | 0.50       | 73   |      |      |      |
| Female  | 0.54                       | 0.61       | 81   |      |      |      |
| Noise   |                            |            |      |      |
| Male    | 0.48                       | 0.52       | 73   |      |      |      |
| Female  | 0.56                       | 0.64       | 81   |      |      |      |
| Workplace Environment | 0.54       | 0.61       | 73   |      |      |      |
| Female  | 0.62                       | 0.73       | 81   |      |      |      |

* p ≤ 0.05.

Table 6. Statistical results between Fisher’s Z values of the correlation coefficients for workplace ergonomics satisfaction relationship, and its dimensions with the academic staff performance according to age

| Correlation between | Age | Academic staff Performance | V Statistic | Sig. |
|---------------------|-----|----------------------------|-------------|------|
| Temperature |                             |              |            |      |
| From 26 to 35 years | 0.23 | 36 | 0.23 | 0.23 | 3.37 | 0.19 |
| From 36 to 45 years | 0.29* | 61 | 0.30 |      |      |      |
| From 46 to 60 years | 0.53* | 57 | 0.58 |      |      |      |
| Furniture Arrangement | 0.13 | 36 | 0.13 | 0.13 | 5.73 | 0.06 |
| From 26 to 35 years | 0.51* | 61 | 0.57 |      |      |      |
| From 36 to 45 years | 0.56* | 57 | 0.63 |      |      |      |
| Facilities |                             |              |            |      |
| From 26 to 35 years | 0.24 | 36 | 0.24 | 0.24 | 4.12 | 0.13 |
| From 36 to 45 years | 0.54* | 61 | 0.60 |      |      |      |
| From 46 to 60 years | 0.59* | 57 | 0.67 |      |      |      |
| Lighting |                             |              |            |      |
| From 26 to 35 years | 0.13 | 36 | 0.13 | 0.13 | 6.16 | 0.05 |
| From 36 to 45 years | 0.48* | 61 | 0.52 |      |      |      |
| From 46 to 60 years | 0.59* | 57 | 0.67 |      |      |      |
| Noise |                             |              |            |      |
| From 26 to 35 years | 0.50* | 36 | 0.55 | 0.55 | 0.13 | 0.94 |
| From 36 to 45 years | 0.55* | 61 | 0.61 |      |      |      |
| From 46 to 60 years | 0.56* | 57 | 0.63 |      |      |      |
| Workplace Environment | 0.36 | 36 | 0.37 | 0.37 | 4.38 | 0.11 |
| From 36 to 45 years | 0.60* | 61 | 0.69 |      |      |      |
| From 46 to 60 years | 0.68* | 57 | 0.83 |      |      |      |

* p ≤ 0.05.
Table 6 shows that there is no statistically significant differences at level ($\alpha = 0.05$) between Fisher's Z values of correlation coefficients for the workplace ergonomics satisfaction relationship, and its dimensions (temperature, furniture arrangement, facilities, noise) with the academic staff at the College of Education in UQU, from the academic staff point of view according to age, except for the presence of statistically significant differences at the level ($\alpha = 0.05$) between Fisher's Z values of the Correlation Coefficients for the satisfaction relationship about workplace ergonomics dimension (lighting) with the academic staff performance at the College of Education in UQU, from the academic staff point of view according to age; and to identify for any of the age groups were statistically significance according to the statistical results $V$; the equation of difference was used between the two values of Fisher's Z for all Correlation Coefficients of the workplace ergonomics (lighting) satisfaction relationship with the academic staff performance, at the College of Education in UQU from their point of view according to age, as shown in Table 7.

Table 7 shows the presence of statistically significant difference at level ($\alpha = 0.05$) between the two Fisher's Z values of the Correlation Coefficients for the satisfaction relationship about workplace ergonomics dimension (lighting) with the academic staff performance at the College of Education in UQU, from the academic staff point of view according to age, in favour of the relationship between them among academic staff with the two age groups [36-45 years, 46-60 years] respectively, compared with the employees of age group [26-35 years].

Pearson Correlation Coefficients was also calculated for the satisfaction relationship of workplace ergonomics, and its dimensions with the academic staff performance at the College of Education in UQU, from their point of view according to the academic rank, and then convert it to the corresponding Fisher's Z values, and then reveal the statistical significance of equation statistical results $V$ between Fisher's Z values of the Correlation Coefficients for workplace ergonomics satisfaction relationship, and its dimensions with the academic staff performance at the College of Education in UQU, from their point of view according to the academic rank, as shown in Table 8.

### Table 7. Results of difference equation between Fisher's Z values for all correlation coefficients of workplace ergonomics (lighting) satisfaction relationship with academic staff performance from their point of view due to age

| Correlation between | Age             | $\rho$ | N  | Fisher's Z | Diff. in Z | Sig. |
|---------------------|-----------------|-------|----|------------|-----------|------|
| Lighting            | From 26 to 35 years | 0.13  | 63 | 0.13       | -2.70*    | 0.01 |
|                     | From 36 to 45 years | 0.48* | 212| 0.52       |           |      |
|                     | From 26 to 35 years | 0.13  | 63 | 0.13       | -3.29*    | 0.00 |
|                     | From 46 to 60 years | 0.59* | 97 | 0.67       |           |      |
|                     | From 36 to 45 years | 0.48* | 212| 0.52       | -1.19     | 0.23 |
|                     | From 46 to 60 years | 0.59* | 97 | 0.67       |           |      |

* $p \leq 0.05$.

### Table 8. Equation statistical results $V$ between Fisher's Z values of the Correlation Coefficients for workplace ergonomics satisfaction relationship, and its dimensions with the academic staff performance according to the academic rank

| Correlation between | Academic Rank     | $\rho$ | N  | Fisher's Z | V Statistic | Sig. |
|---------------------|-------------------|-------|----|------------|-------------|------|
| Temperature         | Instructor        | 0.37* | 32 | 0.38       | 1.82        | 0.61 |
|                     | Assistant Professor| 0.21  | 63 | 0.21       |             |      |
|                     | Associate Professor| 0.41* | 35 | 0.44       |             |      |
|                     | Professor         | 0.46* | 24 | 0.50       |             |      |
| Furniture Arrangement | Instructor     | 0.22  | 32 | 0.22       | 6.36        | 0.10 |
|                     | Assistant Professor| 0.31* | 63 | 0.33       |             |      |
|                     | Associate Professor| 0.65* | 35 | 0.78       |             |      |
|                     | Professor         | 0.54* | 24 | 0.60       |             |      |
| Facilities          | Instructor        | 0.50* | 32 | 0.55       | 18.65*      | 0.00 |
|                     | Assistant Professor| 0.17  | 63 | 0.17       |             |      |
|                     | Associate Professor| 0.71* | 35 | 0.88       |             |      |
|                     | Professor         | 0.80* | 24 | 1.10       |             |      |
| Lighting            | Instructor        | 0.44* | 32 | 0.47       | 8.62*       | 0.03 |
|                     | Assistant Professor| 0.19  | 63 | 0.19       |             |      |
|                     | Associate Professor| 0.65* | 35 | 0.78       |             |      |
|                     | Professor         | 0.59* | 24 | 0.68       |             |      |
| Noise               | Instructor        | 0.73* | 32 | 0.94       | 5.69        | 0.13 |
|                     | Assistant Professor| 0.39* | 63 | 0.41       |             |      |
|                     | Associate Professor| 0.57* | 35 | 0.65       |             |      |
|                     | Professor         | 0.59* | 24 | 0.68       |             |      |
| Workplace Environment | Instructor      | 0.57* | 32 | 0.65       | 8.77*       | 0.03 |
|                     | Assistant Professor| 0.34* | 63 | 0.36       |             |      |
|                     | Associate Professor| 0.72* | 35 | 0.92       |             |      |
|                     | Professor         | 0.72* | 24 | 0.91       |             |      |
### Table 9. Difference equation between Fisher's Z two values for all Correlation Coefficients of the workplace ergonomics dimensions (lighting, facilities) satisfaction relationship with the academic staff performance from their points of view according to the academic rank

| Correlation between | Academic Rank | Academic staff Performance | Diff. in Z | Sig. |
|---------------------|---------------|---------------------------|------------|-----|
|                     | ρ            | N            | Fisher's Z |     |
| Facilities          | Instructor   | 0.50*        | 32         | 0.55    | 1.70  | 0.09  |
|                     | Assistant Professor | 0.17       | 63         | 0.17    |       |       |
|                     | Instructor   | 0.50*        | 32         | 0.55    | -1.27 | 0.20  |
|                     | Associate Professor | 0.71*    | 35         | 0.88    |       |       |
|                     | Professor    | 0.50*        | 32         | 0.55    | -1.92 | 0.05  |
|                     | 0.80*        | 24          | 1.10       |         |       |       |
|                     | Assistant Professor | 0.17      | 63         | 0.17    | -3.25* | 0.00  |
|                     | Associate Professor | 0.71*    | 35         | 0.88    | -3.69* | 0.00  |
|                     | Professor    | 0.17        | 63         | 0.17    | -3.69* | 0.00  |
|                     | 0.80*        | 24          | 1.10       |         |       |       |
|                     | Assistant Professor | 0.71      | 35         | 0.88    | -0.80  | 0.42  |
|                     | Professor    | 0.71        | 35         | 0.88    | -0.80  | 0.42  |
|                     | 0.80*        | 24          | 1.10       |         |       |       |
| Lighting            | Instructor   | 0.44*        | 32         | 0.47    | 1.25  | 0.21  |
|                     | Assistant Professor | 0.19      | 63         | 0.19    | -1.19 | 0.23  |
|                     | Instructor   | 0.44*        | 32         | 0.47    | -0.72 | 0.47  |
|                     | Associate Professor | 0.65*    | 35         | 0.78    |       |       |
|                     | Professor    | 0.59*       | 24          | 0.68    | -1.93 | 0.05  |
| Workplace Environment| Assistant Professor | 0.19      | 63         | 0.19    | -1.93 | 0.05  |
|                     | Associate Professor | 0.65*    | 35         | 0.78    | 0.35  | 0.72  |
|                     | Professor    | 0.59*       | 24          | 0.68    | 0.35  | 0.72  |
|                     | Instructor   | 0.57*        | 32         | 0.65    | 1.30  | 0.20  |
|                     | Assistant Professor | 0.34*    | 63         | 0.36    |       |       |
|                     | Instructor   | 0.57*        | 32         | 0.65    | -1.04 | 0.30  |
|                     | Associate Professor | 0.72*    | 35         | 0.92    | -0.92 | 0.36  |
|                     | Professor    | 0.57*       | 24          | 0.91    | -2.55*| 0.01  |
|                     | Assistant Professor | 0.34*    | 63         | 0.36    |       |       |
|                     | Associate Professor | 0.72*    | 35         | 0.92    | -2.19*| 0.03  |
|                     | Professor    | 0.34*       | 24          | 0.91    | -2.19*| 0.03  |
|                     | Assistant Professor | 0.72*      | 35         | 0.92    |       |       |
|                     | Associate Professor | 0.72*    | 35         | 0.92    |       |       |

* ρ ≤ 0.05.

Table 8 shows that there is no statistically significant differences at level (α = 0.05) between Fisher's Z values of satisfaction correlation coefficients for the workplace ergonomics dimensions (lighting, facilities) satisfaction relationship, and its dimensions (temperature, furniture arrangement, noise) with the academic staff performance at the College of Education in UQU, from their point of view according to age; except for the presence of statistically significant differences at the level (α = 0.05) between Fisher’s Z values of the Correlation Coefficients for the satisfaction relationship about workplace ergonomics dimensions (lighting, facilities) with the academic staff performance at the College of Education in UQU, from their point of view according to age, and to identify for any of the age groups were statistically significance according to the statistical results V; the equation of difference was used between the two values of Fisher’s Z for all Correlation Coefficients of the workplace ergonomics dimensions (lighting, facilities) satisfaction relationship with the academic staff performance, at the College of Education in UQU from their point of view according to the academic rank, as shown in Table 9.

Table 9 shows that there is statistically significant difference at level (α=0.05) between the two Fisher's Z values of the Correlation Coefficients for the satisfaction relationship about workplace ergonomics with the academic staff performance at the College of Education in UQU, from their point of view according to the academic rank [Associate Professor, Professor] compared with the academic staff of academic rank [Assistant Professor], and it also shows the presence of statistically significant difference at level (α = 0.05) between the two Fisher's Z values of the Correlation Coefficients for the satisfaction relationship about workplace ergonomics (facilities) with the academic staff performance at the College of Education in UQU, from their point of view according to the academic rank; in favour of the relationship between them among academic staff of the two academic ranks [Associate Professor, Professor] respectively, compared with the academic staff of academic rank [Assistant Professor], and it also shows the presence of statistically significant difference at level (α = 0.05) between the two Fisher's Z values of the Correlation Coefficients for the satisfaction relationship about workplace ergonomics (lighting) with the academic staff performance at the College of Education in UQU, from their point of view according to the academic rank; [Associate Professor], compared with the academic staff of academic rank [Assistant Professor].
6. Conclusion

- The workplace ergonomics satisfaction level, and its dimensions at the College of Education in UQU, according to academic staff point of view, was average.
- The performance level of academic staff at the College of Education in UQU, from their points of view, was high.
- Statistically significant high positive relationships at level (α=0.05); two correlations out of six between the satisfaction of workplace ergonomics and its noise dimension, on the one side and the academic staff performance on the other side, at the College of Education in UQU, from their academic staff point of view.
- Statistically significant average positive relationships at level (α=0.05); four correlations out of six between the satisfaction of workplace ergonomics dimensions (temperature, furniture arrangement, facilities, lighting), on the one side and the academic staff performance on the other side, at the College of Education in UQU, from the academic staff point of view.
- There is no statistically significant difference at level (α=0.05) between the two Fisher's Z values, for the Correlation Coefficients of workplace ergonomics satisfaction relationship, and its dimensions with the academic staff performance at the College of Education in UQU, from the academic staff point of view according to gender.
- There is no of statistically significant differences at level (α = 0.05) between Fisher's Z values of correlation coefficients for the workplace ergonomics satisfaction relationship, and its dimensions (temperature, furniture arrangement, facilities, noise) with the academic staff at the College of Education in UQU, according to academic staff point of view for age from (46-60) and from (36-45).
- There is statistically significant difference at level (α=0.05) between the two Fisher's Z values of correlation Coefficients for the satisfaction relationship about workplace ergonomics with the academic staff performance at the College of Education in UQU, from their point of view according to the academic rank; [Associate Professor, Professor], compared with the academic staff of academic rank [Assistant Professor].

References

[1] Hameed, Amina, and Shehla Amjad. 2009. 'Impact of office design on employees productivity; a case study of banking organizations of Abbottabad, Pakistan'.
[2] THOMPSON JR, A, and A STRICKLAND III. 1995. 'Strategic management: concepts and cases. Homewood', Illinois: Irwin.
[3] Gabčánová, IVETA. 2011. 'The employees—the most important asset in the organizations', Human Resources Management & Ergonomics, 5: 30-33.
[4] International, Ergonomics Association. 2017. 'Definition and domains of ergonomics', Obtained from IEA: http://www. ica.cc/whats/index. html.
[5] Riratanaphong, Chaiwat. 2009. 'Innovative Workplace Design: A Case Study of the Faculty of Architecture, Delft University of Technology', Journal of Architectural/Planning Research and Studies, 6: 65-86.
[6] Bevan, Stephen. 2012. 'Good work, high performance and productivity', Work Foundation.
[7] Mowrer, O Hobart. 1939. 'A stimulus-response analysis of anxiety and its role as a reinforcing agent', Psychological review, 46: 553.
[8] Nevala, D.G. 1992. 'Physical Settings of Work', Public Productivity and Management Review, 15: 14.
[9] Patterson, Malcolm G, Michael A West, Rebecca Lawthom, and Stephen Nickell. 1997. Impact of people management practices on business performance (Institute of Personnel and Development London).
[10] Stoessel, Matthew J. 2001. 'The impact of the workplace on effective employee performance in Corporate America'.
[11] Mohr, R. 1996. 'Office space is a revenue enhancer, not an expense', National Real Estate Investor, 38: 46-47.
[12] Roelofszen, Paul. 2002. 'The impact of office environments on employee performance: The design of the workplace as a strategy for productivity enhancement', Journal of facilities Management, 1: 247-64.
[13] Kroemer, Karl HE. 2002. Office ergonomics (CRC Press).
[14] Jeffrey E. Fernandez. (1995) Ergonomics in the workplace, Facilities, 13: 20-27.
[15] OSHA, Occupational Safety and Health Academy. 2017. 'Introduction to ergonomics: OSHA study guide', Accessed 15 May.
[16] Boahabha, Sanner Al. 2005. 'The role of the quality administrative computerized data for raising the performance level', Naef Academy for safety science- Sudan Arabia.
[17] Cooper, Chad, and Brian H Kleiner. 2001. 'New developments in ergonomics', Management research news, 24: 114-17.
[18] Aamodi, Michael G. 1996. Applied industrial/organizational psychology (Brooks/Cole Publishing Company).
[19] Badayai, Abdul Rahman Ahmad. 2012. 'A theoretical framework and analytical discussion on uncongenial physical workplace environment and job performance among workers in industrial sectors', Procedia-Social and Behavioral Sciences, 42: 486-95.
[20] Cook, Catherine, Lisa Downnes, and Julia Bowman. 2008. 'Long-term effects of forearm support: computer users working at conventional desks', Work, 30: 107-12.
[21] Jayaratne, ILK, and DN Fernando. 2009. 'Ergonomics related to seating arrangements in the classroom: worst in South East Asia? The situation in Sri Lankan school children', Work, 34: 409-20.
[22] Asnui, M, A Hussin, and H Paino. 2012. 'The importance of work environment facilities', International Journal of Learning and Development, 2: 289-98.
[23] Liaqat, Misbah, Victor Chang, Abdullah Gani, Siti Hafizah Ab Hamid, Muhammad Toseef, Umar Shoaib, and Rana Liaqat Ali. 2017. 'Federated cloud resource management: Review and discussion', Journal of Network and Computer Applications, 77: 87-105.
[24] Leblhici, Demet. 2012. 'Impact of workplace quality on employee's productivity: case study of a bank in Turkey', Journal of Business, Economics, 1: 38-49.
[25] Mazubane, Nonkululeko Thabisile. 2017. 'The effect of office setting on employees performance: a case study of eThekwini Municipality'.
[26] Sup, R. 2003. 'Control the factors that influence employee success. Managing the Hispanic workforce Conference', Cornell University and Pennsylvania State University.
[27] Asante, Kingsley. 2012. 'The impact of office ergonomics on employee performance; a case study of the Ghana National Petroleum Corporation (GNPC')
[28] Gensler. 2006. "The US Workplace Survey." In.
[29] Amir, F. 2010. "Measuring the impact of office environment on performance level of employees: A case of private sector of Pakistan." In Proceedings of the 2nd International Conference of AGBA South Asia Chapter on Nurturing Innovation, Entrepreneurship, Investments and Public Private Partnership-in Global Environment, 247-64.
[30] Bridger, Robert. 2008. Introduction to ergonomics (Crc Press).
[31] Newsham, G., Brand, J., Donnelly, C., Veitch, J., Aries, M., & Charles, K. 2009. Linking Indoor Environment Conditions to Job Satisfaction: A Field Study. Building Research & Information, 37: 129-147.
Appendixes

Appendix (A)

The initial form of workplace environment satisfaction instrument at the College of Education in UQU, according to academic staff point of view.

Appendix (B)

List of initial form arbitrators for satisfaction instrument of the workplace environment, according to the academic rank and specialization.

| Number | Arbitrators                        | Academic Ranks       | Specialization          |
|--------|-----------------------------------|----------------------|-------------------------|
| 1      | Dr. Manal Safer                   | Associate Professor  | Educational management  |
| 2      | Dr. Maha Al-Sharif                | Assistant Professor  | Educational management  |
| 3      | Dr. Manal Al-Gammedi              | Assistant Professor  | Educational management  |

Appendix (C)

The arbitration process results of satisfaction instrument for the workplace environment at the College of Education in UQU, According to academic staff point of view.

| Dimension                  | Before Judging | After Judging | Result of Judging |
|---------------------------|----------------|---------------|------------------|
|                          | ID             | Content of Item | ID               | Content of Item |                             |                             |
| TEMPERATURE               |                |                |                  |                |                             |                             |
| 1                         | 1              | The overall temperature of my office is pleasant | 1              | The overall temperature of my office is pleasant | same                        |
| 2                         | 2              | There is a proper ventilation in my office | 2              | There is a proper ventilation in my office | same                        |
| 3                         | 3              | I can control my office temperature any time | 3              | I can control my office temperature | language                    |
| 4                         | 4              | The suitable temperature in my office affects my performance | 4              | The suitable temperature in my office affects my performance positively | language                    |
| 5                         | 5              | The air quality of my office temperature is suitable | 5              | The air quality of my office temperature is suitable | same                        |
| FURNITURE ARRANGEMENT     |                |                |                  |                |                             |                             |
| 6                         | 6              | My office furniture is good quality | 6              | My office furniture is high quality | language                    |
| 7                         | 7              | My office furniture is flexible to move | 7              | My office furniture is flexible to move | same                        |
| 8                         | 8              | I like my office decoration | 8              | I am satisfied with my office decoration | language                    |
| 9                         | 9              | My office is well organized | 9              | My office is well organized | same                        |
| 10                        | 10             | My office is sufficiently equipped for my work needs | 10             | My office is sufficiently equipped for my typical needs | language                    |
| FACILITIES                |                |                |                  |                |                             |                             |
| 11                        | 11             | All facilities in my workplace environment are cleaned | 11             | All facilities in my workplace environment are regularly cleaned | language                    |
| 12                        | 12             | My workplace provides all required facilities | 12             | My workplace provides all required facilities | same                        |
| 13                        | 13             | My workplace facilities are well designed | 13             | My workplace facilities are well designed | same                        |
| 14                        | 14             | My workplace provides facilities which care safety | 14             | My workplace provides facilities which support our research, teaching, learning, and other operations | language                    |
| 15                        | 15             | My workplace facilities are easily accessed | 15             | My workplace facilities are easily accessed | same                        |
| LIGHTING                  |                |                |                  |                |                             |                             |
| 16                        | 16             | I don't face any problems of lighting in my office | 16             | I don't face any problems with lighting in my office | language                    |
| 17                        | 17             | Windows in my office provide me natural light | 17             | Windows in my office provide me natural light | same                        |
| 18                        | 18             | My office lighting supports the function | 18             | My office lighting supports the function | same                        |
| 19                        | 19             | My office lighting supports my productivity | 19             | My office lighting supports my productivity | same                        |
| 20                        | 20             | My workspace is provided with efficient lighting | 20             | My workspace is provided with efficient lighting so I can work easily | language                    |
| NOISE                     |                |                |                  |                |                             |                             |
| 21                        | 21             | My work environment is quiet | 21             | My work environment is quiet | same                        |
| 22                        | 22             | My workspace is free from noise distractions | 22             | My workspace is free from noise distractions | same                        |
| 23                        | 23             | My speech privacy | 23             | I have suitable privacy in my office | language                    |
| 24                        | 24             | I have undisturbed time | 24             | I have undisturbed time | same                        |
| 25                        | 25             | The workplace level of noise is low | 25             | The workplace level of noise is low | same                        |
Appendix (D)

The final form of satisfaction instrument for the workplace environment at the College of Education in UQU, according to academic staff point of view.

Appendix (E)

Corrected Correlation Coefficient values for the satisfaction relationship items of workplace environment instrument and its dimensions.

| Dimension and item ID | Content of items of Workplace Environment instrument due to Dimension | Corrected Item-Total Correlation |
|-----------------------|---------------------------------------------------------------|--------------------------------|
|                       |                                                               | Dimension          | instrument          |
| TEMPERATURE           |                                                               |                   |                   |
| 1                     | The overall temperature of my office is pleasant              | 0.82              | 0.63              |
| 2                     | There is a proper ventilation in my office                    | 0.87              | 0.68              |
| 3                     | I can control my office temperature                           | 0.72              | 0.51              |
| 4                     | The suitable temperature in my office affects my performance positively | 0.44              | 0.42              |
| 5                     | The air quality of my office temperature is suitable           | 0.82              | 0.60              |
| FURNITURE ARRANGEMENT |                                                               |                   |                   |
| 6                     | My office furniture is high quality                           | 0.81              | 0.53              |
| 7                     | My office furniture is flexible to move                        | 0.74              | 0.58              |
| 8                     | I am satisfied with my office decoration                      | 0.86              | 0.70              |
| 9                     | My office is well organized                                   | 0.82              | 0.67              |
| 10                    | My office is sufficiently equipped for my typical needs       | 0.78              | 0.73              |
| FACILITIES            |                                                               |                   |                   |
| 11                    | All facilities in my workplace environment are regularly cleaned | 0.57              | 0.51              |
| 12                    | My workplace provides all required facilities                 | 0.79              | 0.70              |
| 13                    | My workplace facilities are well designed                     | 0.77              | 0.68              |
| 14                    | My workplace provides facilities which support our research, teaching, learning, and other operations. | 0.85              | 0.75              |
| 15                    | My workplace facilities are easily accessed                   | 0.66              | 0.61              |
| LIGHTING              |                                                               |                   |                   |
| 16                    | I don't face any problems with lighting in my office          | 0.69              | 0.61              |
| 17                    | Windows in my office provide me natural light                 | 0.62              | 0.48              |
| 18                    | My office lighting supports the function                       | 0.70              | 0.63              |
| 19                    | My office lighting supports my productivity                   | 0.67              | 0.48              |
| 20                    | My workspace is provided with efficient lighting so I can work easily | 0.81              | 0.67              |
| NOISE                 |                                                               |                   |                   |
| 21                    | My work environment is quiet                                  | 0.91              | 0.76              |
| 22                    | My workspace is free from noise distractions                  | 0.92              | 0.76              |
| 23                    | I have suitable privacy in my office                          | 0.88              | 0.71              |
| 24                    | I have undisturbed time                                       | 0.90              | 0.73              |
| 25                    | The workplace level of noise is low                           | 0.94              | 0.76              |

*p ≤ 0.05

Appendix (F)

Correlation Coefficients values for satisfaction dimensions relationship of workplace environment with the instrument and satisfaction dimensions of other workplace environments

| Correlation among dimensions | Temperature | Furniture Arrangement | Facilities | Lighting | Noise |
|------------------------------|-------------|-----------------------|------------|----------|-------|
| Furniture Arrangement        | 0.49        |                       |            |          |       |
| Facilities                   | 0.43        | 0.55                  |            |          |       |
| Lighting                     | 0.56        | 0.44                  | 0.67       |          |       |
| Noise                        | 0.41        | 0.56                  | 0.68       | 0.59     |       |
| Whole Instrument             | 0.75        | 0.78                  | 0.82       | 0.80     | 0.82  |

*p ≤ 0.05

Appendix (G)

Internal consistency reliability coefficient values and the satisfaction instrument retest of the workplace environment and its dimensions.

| Instrument and Dimensions       | Reliability Statistics | Cronbach's α | Stability Index² | N of Items |
|---------------------------------|------------------------|--------------|------------------|------------|
| Temperature                     | 0.89                   | 0.82         | 5                |
| Furniture Arrangement           | 0.92                   | 0.83         | 5                |
| Facilities                      | 0.89                   | 0.86         | 5                |
| Lighting                        | 0.85                   | 0.83         | 5                |
| Noise                           | 0.97                   | 0.84         | 5                |
| Whole Instrument                | 0.95                   | 0.81         | 25               |

*p ≤ 0.05.
Appendix (H)

The initial form of employees' performance instrument at the College of Education in UQU, according to academic staff point of view.

Appendix (I)

The arbitration process results of employees' performance instrument at the College of Education of UQU, according to academic staff point of view.

| ID | Before Judging | After Judging | Result of Judging |
|----|----------------|---------------|-------------------|
| 1  | My workplace environment helps me to complete my daily tasks easily | My workplace environment helps me to complete my daily tasks easily | same |
| 2  | My workplace environment helps me to complete my daily tasks on time | My workplace environment helps me to complete my daily tasks on time | same |
| 3  | I am satisfied with my workplace environment | I am satisfied with my workplace environment | same |
| 4  | My satisfaction of my workplace environment affects my performance | My workplace environment helps me to complete my daily tasks easily | deleted |
| 5  | My workplace environment encourages me to work efficiently | My workplace environment encourages me to work efficiently | same |
| 6  | Good workplace environment affects my performance | Good workplace environment affects my performance | deleted |

Appendix (J)

The final form of employees' performance instrument at the College of Education in UQU, from the standpoints of employees.

Appendix (K)

Corrected Correlation Coefficients values for the relationship of employees' performance items, at the College of Education in UQU with the instrument.

| ID | Content of instrument items of Employees Performance | Corrected Item-Total Correlation* |
|----|-----------------------------------------------------|----------------------------------|
| 1  | My workplace environment helps me to complete my daily tasks easily | 0.69 |
| 2  | My workplace environment helps me to complete my daily tasks on time | 0.69 |
| 3  | I am satisfied with my workplace environment | 0.75 |
| 4  | My workplace environment encourages me to work efficiently | 0.87 |
| 5  | My workplace environment boosts my creativity | 0.88 |
| 6  | My workplace environment enhances my motivation | 0.85 |
| 7  | My workplace environment affects my productivity | 0.87 |

* p ≤ 0.05.

Appendix (L)

The arithmetic means for satisfaction items of workplace environment (noise) at the College of Education in UQU, according to academic staff point of view in descending order and its standard deviations.

| Rank | ID | Items of Noise                           | Mean  | Std. Dev. | Degree |
|------|----|-----------------------------------------|-------|-----------|--------|
| 1    | 21 | My work environment is quiet            | 3.87  | 0.94      | High   |
| 2    | 22 | My workspace is free from noise distractions | 3.84  | 0.98      | High   |
| 3    | 25 | The workplace level of noise is low     | 3.82  | 0.97      | High   |
| 4    | 24 | I have undisturbed time                 | 3.81  | 0.97      | High   |
| 5    | 23 | I have suitable privacy in my office    | 3.74  | 1.03      | High   |

Appendix (M)

The arithmetic means for satisfaction items of workplace environment (facilities) at the College of Education in UQU, according to academic staff point of view in descending order and its standard deviations.
| Rank | ID | Items of Facilities                                      | Mean | Std. Dev. | Degree |
|------|----|----------------------------------------------------------|------|-----------|--------|
| 1    | 11 | All facilities in my workplace environment are regularly cleaned | 4.21 | 0.82      | High   |
| 2    | 15 | My workplace facilities are easily accessed             | 3.95 | 0.81      | High   |
| 3    | 12 | My workplace provides all required facilities           | 3.59 | 0.99      | Moderate|
| 4    | 14 | My workplace provides facilities which support our research, teaching, learning, and other operations | 3.59 | 1.03      | Moderate|
| 5    | 13 | My workplace facilities are well designed               | 3.40 | 0.99      | Moderate|

**Appendix (N)**

The arithmetic means for satisfaction items of workplace environment (lighting) at the College of Education in UQU, according to academic staff's point of view in descending order and its standard deviations.

| Rank | ID | Items of Lighting                                      | Mean | Std. Dev. | Degree |
|------|----|--------------------------------------------------------|------|-----------|--------|
| 1    | 19 | My office lighting supports my productivity            | 3.63 | 0.87      | Moderate|
| 2    | 18 | My office lighting supports the function               | 3.60 | 0.80      | Moderate|
| 3    | 16 | I don't face any problems with lighting in my office   | 3.49 | 0.93      | Moderate|
| 4    | 20 | My workspace is provided with efficient lighting so I can work easily | 3.47 | 0.85      | Moderate|
| 5    | 17 | Windows in my office provide me natural light          | 2.75 | 1.10      | Moderate|

**Appendix (O)**

The arithmetic means for satisfaction items of workplace environment (furniture's arrangement) at the College of Education in UQU, according to academic staff's point of view in descending order and its standard deviations.

| Rank | ID | Items of Furniture Arrangement                         | Mean | Std. Dev. | Degree |
|------|----|--------------------------------------------------------|------|-----------|--------|
| 1    | 7  | My office furniture is flexible to move                | 3.38 | 0.91      | Moderate|
| 2    | 9  | My office is well organized                            | 3.34 | 1.04      | Moderate|
| 3    | 10 | My office is sufficiently equipped for my typical needs| 3.26 | 1.08      | Moderate|
| 4    | 6  | My office furniture is high quality                    | 3.22 | 1.02      | Moderate|
| 5    | 8  | I am satisfied with my office decoration               | 3.08 | 1.05      | Moderate|

**Appendix (P)**

The arithmetic means for satisfaction items of workplace environment (temperature) at the College of Education in UQU, according to academic staff's point of view in descending order and its standard deviations.

| Rank | ID | Items of Temperature                                      | Mean | Std. Dev. | Degree |
|------|----|----------------------------------------------------------|------|-----------|--------|
| 1    | 4  | The suitable temperature in my office affects my performance positively | 3.94 | 1.05      | High   |
| 2    | 5  | The air quality of my office temperature is suitable      | 3.10 | 1.10      | Moderate|
| 3    | 1  | The overall temperature of my office is pleasant         | 3.06 | 1.26      | Moderate|
| 4    | 2  | There is proper ventilation in my office                | 2.88 | 1.24      | Moderate|
| 5    | 3  | I can control my office temperature                      | 2.44 | 1.34      | Moderate|

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