

Employee Satisfaction from Indoor Work Environments in Doha, Qatar

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Abstract

Several studies have been conducted by environmental psychologists on worker satisfaction from office spaces with the attempt to relate it to human productivity and profit. Most of such studies have been conducted in the western context, those in the cultural context of the Gulf Region being very limited. This research reports on office worker satisfaction from the indoor environment in selected office buildings set in the socio-cultural-religious context of Qatar and the Gulf region. The study used self-administered questionnaires as the predominant method for the research. Personal interviews were also conducted with willing participants.

Results revealed that around half of the respondents were satisfied with the indoor environment of their offices. Presence of a window and access to daylighting are seen to contribute highly towards satisfaction. Most dissatisfaction expressed was less on account of actual physical conditions and related more to the poor ability of users to control the environmental conditions like temperature, lighting, ventilation and humidity. It is important that building designers provide some means of control over indoor environmental parameters to occupants of workspaces to improve perceived satisfaction and increase worker productivity.

Keywords: workplace, satisfaction, office workers, indoor environments, window, temperature, ventilation, daylighting, Qatar

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1 Introduction

1.1 Background

Sustainable architecture is about making environment friendly buildings which can promote the physical and psychological health of its occupants. Office workers constitute around half of the active workforce in advanced economies and their output contributes critically to the economy. The nature of work, required skills, changing technology, entry of women into the workforce as well as advancements in architecture and construction technology have all changed office space planning and environment.

The response of office workers to these changes in terms of satisfaction from their work environment has been the topic of a host of studies by environmental psychologists particularly in the western world. These studies have researched into the varying space configurations of office spaces, design and indoor environment parameters and the corresponding worker satisfaction while attempting to link them to worker productivity and resultant corporate profit. However, the method and objectives of the study have varied with the discipline of the researcher, and the socio-cultural-economic-politico setting of the study. The differences in these characteristics have resulted in totally different results which are therefore difficult to generalise. Further, while western studies have limited applicability in the context of the Gulf, regional studies in the Arabic cultural context are severely limited. This research seeks to shed light on these aspects as well as to contribute to the database of limited studies in the region.

1.2 Study Area: Doha, Qatar

Qatar with a population of 2.17 million in May 2014 is one of the smallest countries of the Gulf Cooperation Council(GCC)(“.: QSA Labor force,” n.d.). It has the world’s fifth largest population growth rate of 3.58 percent and ranks second with a net migration rate of 27.35 migrants per 1000 population in 2014(“CIA - The World Factbook,” n.d.). Qatar has the third largest gas reserves in the world amounting to 13 percent and was the richest country in the world with a GDP per capita at purchasing power parity(PPP) of US102.2k in 2012.In 2010 it was the world’s fastest growing economy with a real GDP growth rate of 19.4 percent (“The Fastest Growing Economy In The World: The Qatari Economy - Business Insider,” n.d.).This growth has been driven by the hydrocarbon and services sectors which is being utilised by the government to build a diversified and sustainable economy (Joannes Mongardini, 2014).

In late 2010 Qatar won the competition to host the Fédération Internationale de Football Association (FIFA) World Cup in 2022. This set the stage for a construction boom in its accommodation, catering and tourism sectors with the country having pledged to build seven new ‘minicities’, nine new stadiums and 84,000 hotel rooms and \$ 10 billion airport to handle 24 million passengers annually (“Qatar in 2011 -- Britannica Online Encyclopedia,” n.d.). A significant number of these buildings will be in around the capital Doha. The event has created an estimated 120,000 jobs in 2013 attracting a large number of expatriate workers to Qatar. As a result of the

population growth and investments, the growth in the non –hydrocarbon sector accelerated from 8.6 percent in 2010 to 11.4 percent in 2013. See Figure 1.

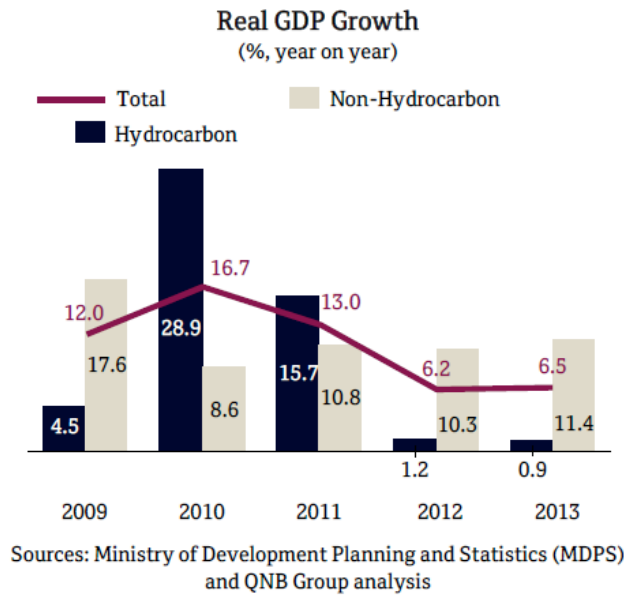


Figure 1 Real GDP Growth

The largest contributor to the non-hydrocarbon GDP growth in the year 2013-14 was the growing service sector particularly government services, financial services, hotels and restaurants, trade, transport and construction (Joannes Mongardini, 2014). See Figure 2.

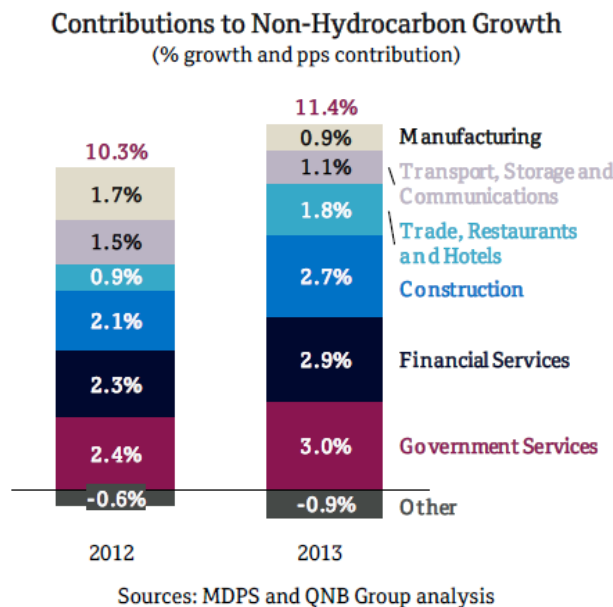


Figure 2 Contributions to Non-Hydrocarbon Growth

The predominant building type required for the functioning of various service sector activities apart from housing is the office building. Office building design has implications not only on energy consumption during construction and operation stages, but also due to the long lasting physical and psychological impact it can have on its worker occupants.

Office worker satisfaction derived from indoor environments is a combination of actual physical environmental conditions as well as the perception of comfort as felt by the occupants. Cities in the hot, harsh climates of the GCC spend a large amount of energy to provide comfortable indoor living conditions to building occupants. Almost all habitable rooms are air-conditioned. Most buildings have a significant amount of glazing though the intense sunshine and dusty winds of the desert climate often lead to them being unopened or covered with blinds. Hence most office spaces rely on artificial lighting for their functioning. But how far do these contribute to occupant satisfaction in workplaces?

This paper seeks to answer this question through a research into employees satisfaction from the indoor environment of their workplaces in office building typologies in Doha in Qatar. The paper details out the levels of satisfaction from the selected indoor parameters, analyses the reasons for the same and provides recommendations to increase satisfaction levels.

2 Literature Review

Office workspaces are commonly classified into private separate offices, open offices, shared offices and cubicle or partitioned office spaces. Private offices are enclosed workspaces for one person indicative of a position of power and suitable for works which are confidential and require concentration. Shared offices are enclosed workspaces for used of two to three people and suitable for semi-concentrated or collaborative small group work. Open work spaces may take the form of a hall which holds more than 10 people and are suitable for tasks which require frequent communication and little concentration. Partitioned or cubicle offices are of two kinds depending on degree of enclosure they provide: seating height partitions and standing height partitions.

Over the past couple of decades flexible workspaces or semi-walled cubicles are being increasingly favoured by corporate companies in contrast to fixed separate private offices with the goal of obtaining economies. On the other hand, many studies have found that these do not provide the benefits of either separate or open workspaces and in fact negatively affect worker satisfaction and productivity (Lai, 2004). Worker satisfaction has been found to be influenced by several workspace design parameters such as spatial design and supporting tasks (Block & Stokes, 1989; Brennan, Chugh, & Kline, 2002; Maher & von Hippel, 2005), heights of partitions (Maher & von Hippel, 2005) and accessibility (Sundstorm, Burt, & Kamp, 1980); environmental parameters such as increased noise (Leather, Beale, & Sullivan, 2003), temperature (Lai, 2004; Mendell, M., 1993), ventilation and natural light (Meerwarth, II, & Briody, 2008), penetration of sunlight (Leather, Pyrgass, Beale, & Lawrence, 1998), access to windows (Nagy, 2000; O'Neill, 1991; Vischer, n.d.; Yildirim, Akalin-Baskaya, & Celebi, 2007), size of windows (Biner, Butler, Lovegrove, & Burns, 1993), substitutes for windows (Biner et al., 1993), and visual privacy (Daroff, Rappoport, & Cushman, R.F, 1992); and personal characteristics such as gender and age (Yildirim et al., 2007), and previous experience(Brennan et al., 2002).

Providing workers with control over their work environment such as daylight and temperature setting, as well as the training of how to exert control also appears to be paramount to optimizing performance and health outcomes (Robertson, Huang,

O'Neill, & Schleifer, 2008). Productivity is associated with temperature settings and inability to personalise temperatures result in poor satisfaction and productivity. While workers adapt their dress code to deal with too hot/too cold issues, user ability to adjust or customize their workspace environment for their personal comfort has been found to be quite important and essential for job satisfaction and productivity (Lai, 2004; Mendell, M., 1993). Other environmental features that contribute heavily to employee comfort levels include ventilation, climate control and good lighting, including natural light (Meerwarth et al., 2008). Studies indicate that the provision of day lighting was associated with higher ratings of comfort and satisfaction (Hua et al., 2011). This desire for natural light rather than artificial light is one of the reasons why windows are very attractive to building occupants. Results of research studies also indicate that propinquity to a window can even buffer or compensate for the negative aspects of open-plan offices (Yildirim et al., 2007). Studies indicate that proximity to window with enough day light and an outside view, decreases feelings of discomfort and thus leads to an improved office impression and job satisfaction. However, being close to a window with poor quality lighting could result in occupant discomfort due to thermal and glare problems (Aries, Myriam B.C, 2010). Research indicates that while many building occupants appreciate the automatic daylight-linked systems, they show a preference to exercise control over the systems and being able to override. Occupants were even found to cover up automatic day lighting sensors to avoid the sudden and frequent change in lighting-conditions that resulted due to automatic controls (Hua, Oswald, & Yang, 2011). Apparently, employees whose workspaces contained both a window and a 1.40m high partition were most satisfied with their space, presumably because they were happy to have enough daylight and outside views while also having partitions giving them a higher level of visual and acoustical privacy (Yildirim et al., 2007).

Since office workers spend a lot of time inside office buildings, sometimes more than what they spent at home, it is essential that proper care be taken while designing workspaces to further worker health and wellbeing, and to increase work productivity and corporate profits. This paper investigates the employee satisfaction from the indoor environment of office buildings in the hot dry desert climatic context of Qatar.

3 Methodology

3.1 Research Design

This research covers four kinds of office spaces in Doha city namely separate private offices, shared offices, and flexible offices: open offices, and partitioned offices. By separate office is meant a room with separating full height walls and occupied by a single occupant. Shared offices are offices with full height walls but in which are occupied by more than one occupant with no partitions in between. Flexible offices are those offices in which density and organization of work spaces can be easily altered. They are of two kinds: open offices and partitioned offices. Open offices are classified as large halls in which a large number of occupants perform without being separated by partitions. Partitioned offices being studied are of two types: those with partition heights of 1 to 1.2 m (seating height privacy) and those with partition heights of 1.8 to 2.1 m (standing height privacy).

3.2 Method and Procedure

Survey research method has been used in this research. A preliminary survey questionnaire was prepared and a pilot survey was conducted within selected office spaces in Qatar university. The questionnaire was modified in the light of the response to the survey and a more stratified detailed questionnaire was prepared for the research. The questionnaire focussed on identifying satisfaction from four physical indoor environmental parameters: Temperature, Humidity, Ventilation and Daylighting from two aspects. Firstly, the respondents had to record their satisfaction from these four physical parameters as it occurred in their workspaces and secondly their ability to control these parameters to improve satisfaction and wellbeing. The responses were recorded on a five point Likert scale ranging from highly satisfied, satisfied, neutral, unsatisfied to highly unsatisfied.

The survey was administered by six undergraduate students of the Department of Architecture and Urban Planning at Qatar university. Surveys were conducted using a combination of self-administered questionnaires and interviews with each respondent for deeper comprehension of the satisfaction parameters. Stratified random sampling was used to identify the respondents for the survey. Surveys were conducted over three months at different times at the convenience of the students.

3.2.1 Building Study Sample

Two office buildings identified as A and B in the downtown of Doha were selected for the study. Office building A hosted a private sector company, was 16 floors in height and had been occupied for 15 years. The office under study was located on its first floor. Office building B chosen for the study hosted a government organization, was 27 floors in height and had been occupied for 10 years. The workspaces studied were located on several floors ranging from three to 24 floors to enable obtaining the necessary samples.

Both office buildings contained all three kinds of office types: separate private offices, shared offices, and flexible offices. Equal samples of separate, shared and flexible workspace occupants were chosen from each office. The flexible office space category was further split into three categories: open plan offices, seating height partition office and standing height partition workspaces. See Figure 3.

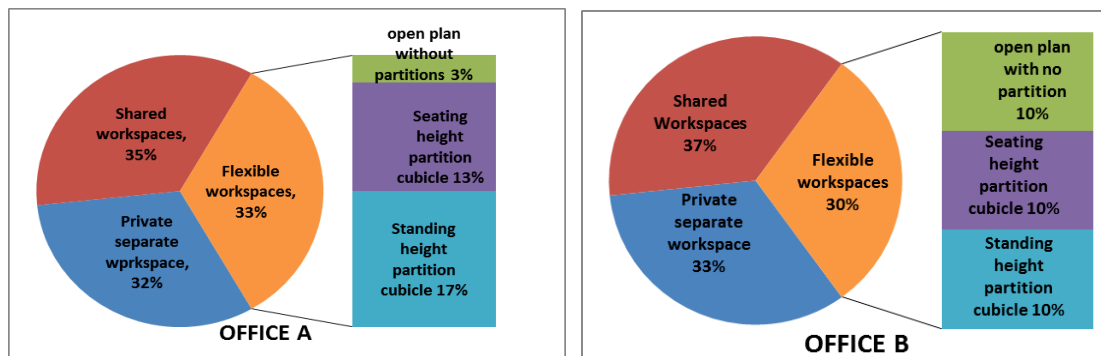


Figure 3 Workspace sample size distribution

The choice of office space types to be surveyed was based on the representative sample of these kinds of offices as it occurred in both office buildings. Shared offices in Office A contained from one to six occupants whereas in Office building B they contained one to nine occupants. There was only one office worker occupying an open space office in Office building A. Though the open office type in Office A was low it has been included in the study with the view of obtaining a response to aid qualitative understanding of satisfaction rather than quantitative analysis.

3.2.2 Respondents Sample

Within the office buildings, respondents were chosen based on stratified sampling. Care was exercised to select occupants occupying different positions within the space, facing different sides of the building: inner areas and facing exterior walls, with and without windows. The sample of respondents thus selected was spread over different nationalities as seen in Figure 4.

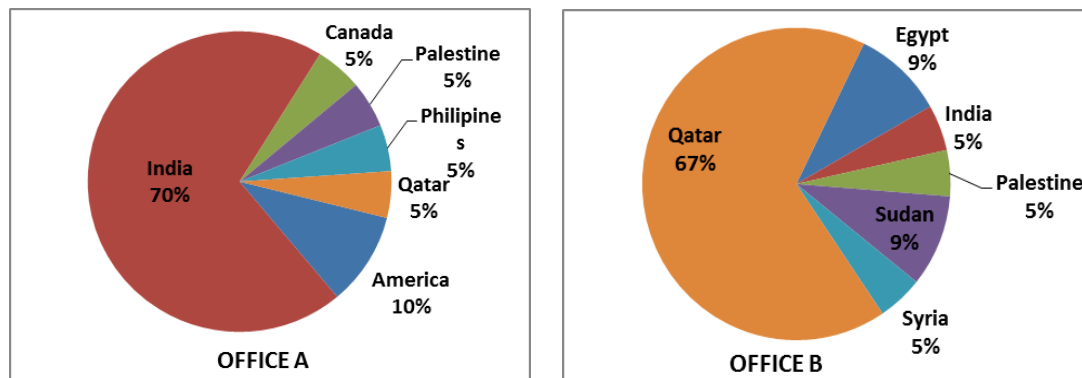


Figure 4 Respondent sample according to nationality

94 percent of the workforce in Qatar consist of expatriate workers (“.: QSA Labor force,” n.d.).The sample for the Office A housing the private sector office reflects a proportionate sampling of the labour force distribution in Qatar. It may be noted that this is not true of Office building B housing the government office. This is because most positions in government offices are occupied by nationals.

Figure 5 shows the respondents according to gender. Females constitute 11 percent of the expatriate service sector workforce and 40 percent of the national workforce. Further 57 percent of Qatari professionals are women which may explain the variation between the larger number of female employees in government offices(Office B) when compared to the private(Office A) and (“.: QSA Labor force,” n.d.). The respondent sample in this study has larger proportion of females than in the population.

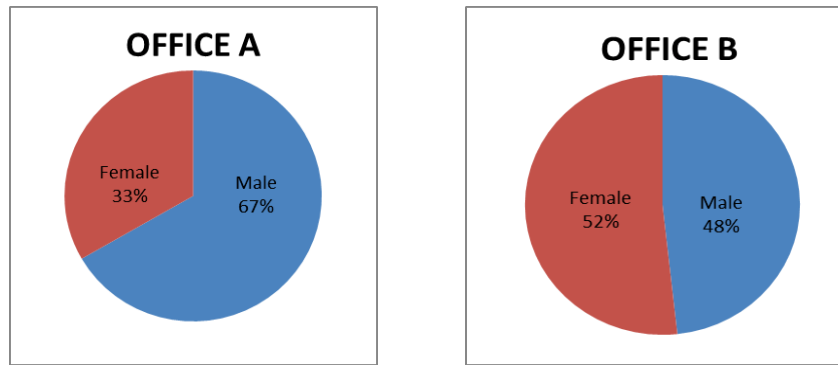


Figure 5 Respondent sample according to Gender

Figure 6 shows the respondent breakup according to religious affiliation. The country has a Muslim population of 77.5 percent (“CIA - The World Factbook,” n.d.). The proportion is well reflected in Office B housing the government organisation. Office A hosting the private organisation with greater expatriate population reveals a wider range of religious affiliations.

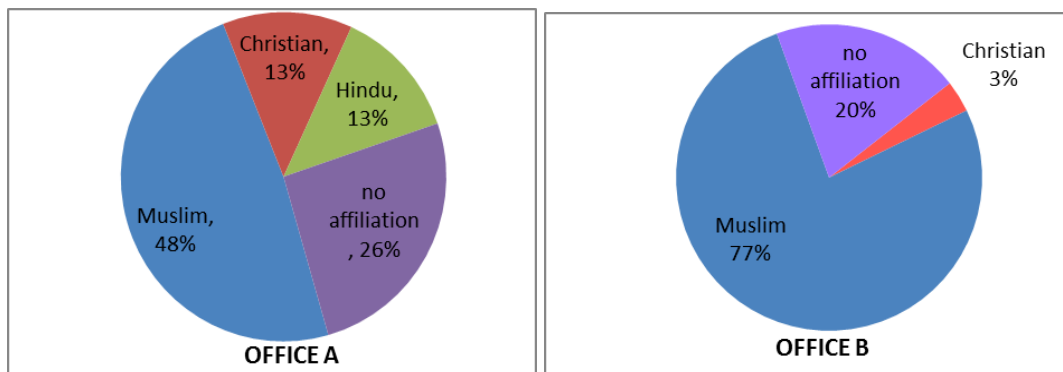


Figure 6 Respondent breakup according to religious affiliation

4 Results

4.1 Response To Workspace Environment: Office A (Private sector office)

It was found that around half of the workers in Office A were happy with the environment of their workspaces while a fifth of the workers were not happy with the indoor environment of their workspaces. See Figure 7.

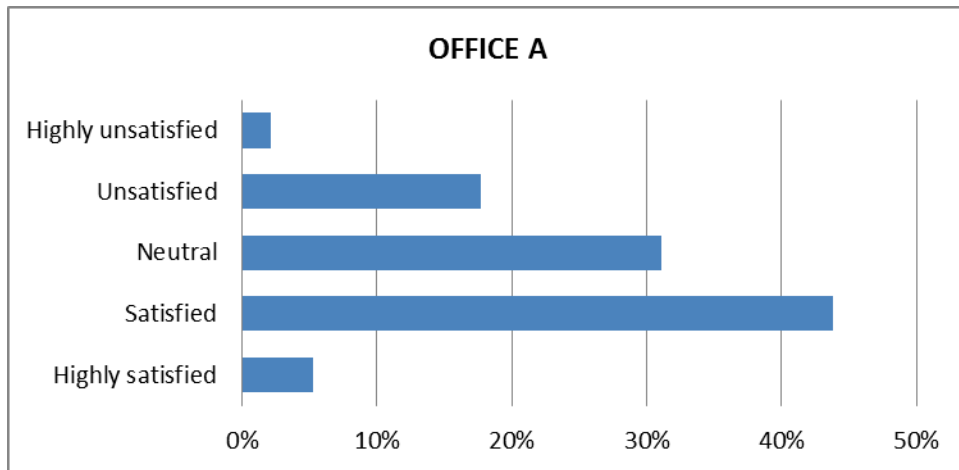


Figure 7 Response to workspace environment

Figure 8 shows the distribution of satisfaction over the various environmental parameters. The highest satisfaction of around 60 percent was recorded on two parameters: room temperature and lighting. The highest dissatisfaction of around 35% was recorded on the parameters: control on ventilation, control on lighting and control on room temperature. It may be noted that nearly 45percent of respondents were satisfied with the access to day lighting, and control on blinds while 20 percent were dissatisfied on the same parameters.

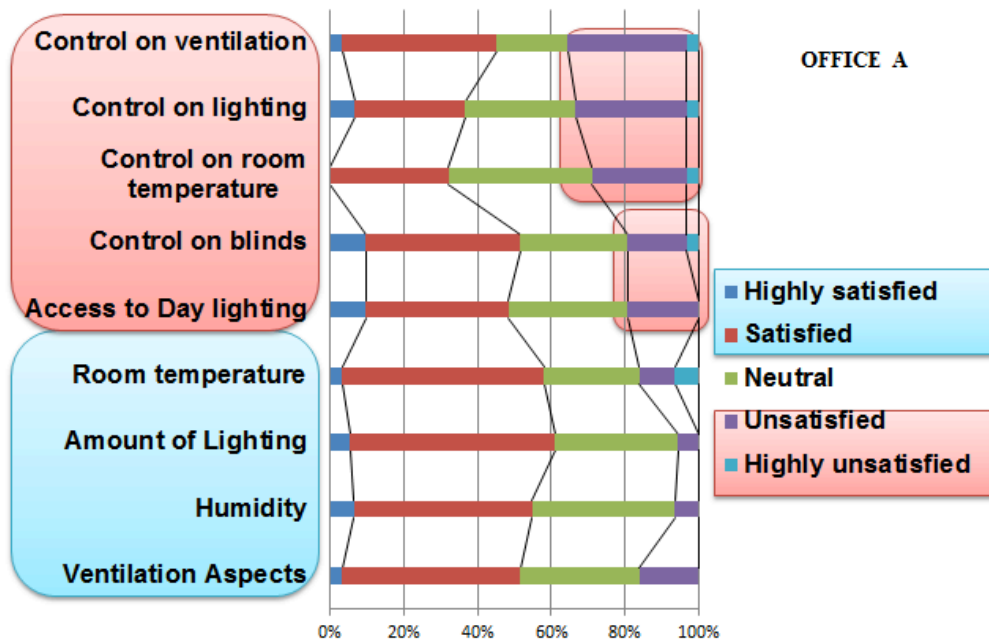


Figure 8 Satisfaction according to environmental parameters

4.2 Response To Workspace Environment: Office B (Governmental organisation)

It was found that around 60% of the occupants in Office B were happy with the environment with nearly a quarter highly satisfied. Only 10% were unsatisfied. See Figure 9.

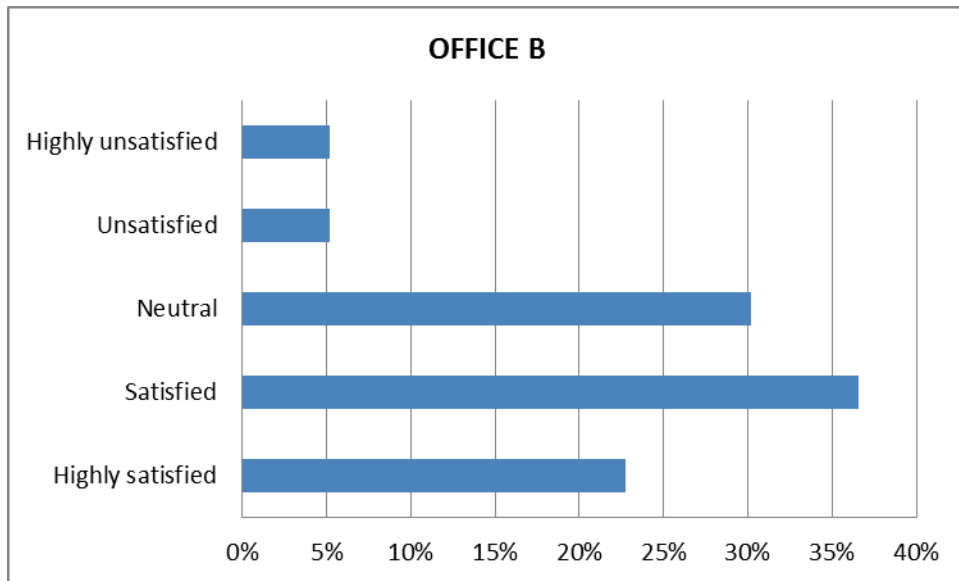


Figure 9 Response to workspace environment

Figure 10 shows the distribution of satisfaction over the various environmental parameters. The highest satisfaction of around 80 percent was recorded on two parameters: access to daylighting and control on blinds. The highest dissatisfaction of around 17% was recorded on the parameters: Ventilation, control on ventilation, control on room temperature.

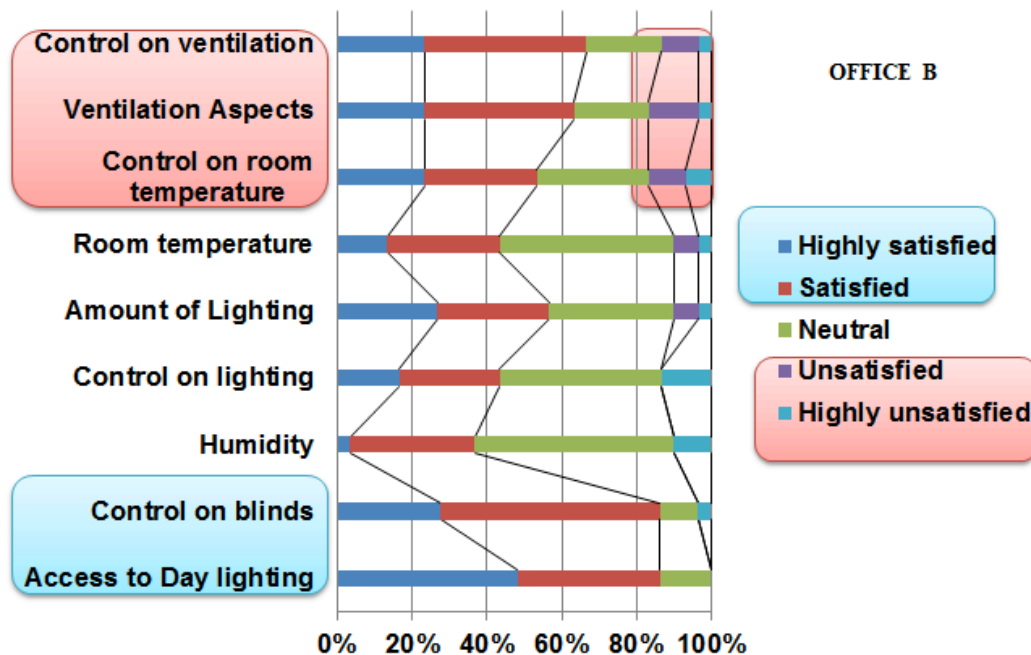


Figure 10 Satisfaction according to environmental parameters

5 Discussion

It is found that workers of Office B are highly satisfied with the workspace environment compared to Office A. The parameters which respondents are most dissatisfied with in both office buildings are ventilation followed by room temperature. Both office buildings are centrally air-conditioned. But dissatisfaction from

ventilation is due to the fact that both towers have large glazed facades with non-operable windows. Dissatisfaction is higher in Office A as it has many respondents who occupy the large open workspace and cubicle workspace area in the central core surrounded by circulation space on the perimeter of which are distributed separate and shared offices. Hence the movement of air is very restricted and the occupants have no way to control ventilation. Further, occupants have no control on the room temperature in both office buildings. Room temperatures are perceived to be too cold or too hot varying with the season and individual preferences. Occupants of both buildings were happy with the artificial lighting but unhappy with the fact that they had no control on it. This was particularly so in Office A with open workspace and cubicle workspace in the large central space. Occupants were not able to control the lighting in this common space as per their personal preferences. It was observed that in both office buildings the dissatisfaction is less on account of the environmental parameter itself but more on the perceived frustration in not being able to control the parameter. The major difference between the satisfaction parameters of Office A and Office B was on access to day lighting and control on blinds. In office A, the larger population of respondents were located in the open and cubicle workspaces in the centre which were surrounded by separate and shared workspaces with glazed walls and inoperable windows. So these occupants had no access to a window and daylighting. On the other hand those with separate and shared workspaces on the building periphery were highly satisfied as they had access to day lighting and control on blinds. In Office B on the other hand, the workspaces were distributed around a core with each workspace having an external glazed wall with blinds. Hence respondents were extremely satisfied with daylighting and control on blinds.

6 Summary and Conclusions

The study covered four kinds of workspace types namely private separate offices, shared offices, open plan offices and cubicle offices with varying partition heights in two multi-storeyed office buildings designated as Office building A and Office building B in Doha. The sample contained respondents from various nationalities, genders and religious affiliations. Office B hosts a government organisation and has three quarters of the respondents as nationals with more than half the workers being women, while office A hosts a private sector office.

It is observed from the study that environmental parameters involving lighting, ventilation, humidity and temperature can positively or negatively affect worker performance and productivity. Workers derive a great sense of satisfaction from having a window in their workspaces and obtaining day lighting as against artificial light. Office workers experience significant dissatisfaction when they cannot control light, temperature, ventilation and blinds in their workspaces even while being satisfied by the environmental parameter itself. Dissatisfaction on all the parameters is higher among those placed in open office and partitioned offices in central spaces as compared to those in separate and shared offices.

The study highlights the role of the indoor work environment in providing worker satisfaction and resultant productivity. It is important that adequate care be taken for the provision of windows and daylighting in all workspaces while designing of Office buildings. Employees satisfaction from office buildings can be greatly increased if

office workers are provided means to exercise control on the four environment parameters in their workspaces: lighting, ventilation, humidity and temperature.

7 Acknowledgement

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