



Research paper

Hotel building design, occupants' health and performance in response to COVID 19

Deepak Bangwal^{a,*}, Jyotsana Suyal^b, Rupesh Kumar^c

^a School of Business, University of Petroleum and Energy Studies, Energy acres, UPES, Kandoli, Dehradun, Uttarakhand 248007, India

^b UIPS, Uttarakhand University, Prem Nagar, Dehradun, Uttarakhand 248007, India

^c School of Business, University of Petroleum and Energy Studies, Energy acres, UPES, Kandoli, Dehradun, Uttarakhand 248007, India



ARTICLE INFO

Keywords:

Hotel building design
Mental & physical health
Employee performance

ABSTRACT

In the COVID-19 pandemic, the employee realized the importance of a healthy workplace. A healthy workplace provides natural protection against respiratory disease and reduces exposure to viruses. Therefore, the current COVID-19 pandemic should be a wake-up call to understand the importance of building design and a dress rehearsal for future challenges because building-based prevention and control measures have become one of the most significant ways of fighting against the epidemic. This study investigates the role of hotel building design in employee health and performance during the COVID-19 pandemic. The study covered the LEED-certified hotel building in India. The formulated Hypothesis was tested empirically by the structural equation modeling (SEM) for determining the potential of the hotel building design. It was obtained from the study that during the COVID-19 pandemic, the hotel building design of the hospitality industry had a more significant influence on employee performance, followed by employee health.

1. Introduction

In India, the hospitality industry was growing faster than the economy and expected 492.21 billion U.S. Dollar contributions in India's GDP in 2028. As of 2019, the hospitality industry created 4.2 crore jobs in India which were 8.1% of total employment in the country. However, this one epidemic has changed the whole scenario. The COVID-19 poses a significant threat to India's travel and tourism industry (Confederation of Indian Industry, 2020; Kaushal and Srivastava, 2021). Due to COVID-19, there is a severe drop in domestic and international travelers. The hospitality industry is currently operating at 10–15% occupancy. As a result, a cumulative drop of 30–50% in income per available room throughout the financial year 2022 and a loss of 14.5 million jobs in the Indian hospitality industry are reported (IANS, 2020; UNWTO, 2020).

The COVID-19 virus can spread readily and cause severe disease to people with existing health problems (Yu et al., 2021; Aguiar-Quintana et al., 2021; Sönmez et al., 2020; Torales et al., 2020; Guan, and Guo et al., 2020, 2020). COVID-19 affects the individual's mental health (e.g., mental depression and stress) and physical health (e.g., asthma and other respiratory problems). Every country is trying hard to find a treatment for COVID-19, but no one can now succeed. The only source is to find alternative strategies and prevention methods to control the

spreading of the virus. As the hospitality sector gradually recovering, the COVID-19 crisis continues to have a profound impact on how hospitality businesses function (Rivera, 2020). The hospitality industry needs to make significant changes to its workplace and operations in the COVID-19 business environment to ensure employee health and performance (Gursoy and Chi, 2020; Yu et al., 2020; Gössling et al., 2020). The hospitality industry is expected to shift its focus to develop healthy and safe building designs to prevent the COVID-19 virus and any other upcoming pandemics for the sustainable growth of the hospitality industry.

Now slowly, the situation has become controllable, but still, people are scared to join their workplace (Gralinski and Menachery, 2020). Fear of COVID-19 will likely cause significant concern among hospitality employees about being exposed to an infected customer or colleague at the workplace. One of the challenges is maintaining social distance while at work. Because hospitality employees have been identified as a high-risk group for coronavirus infection as they must continue to interact with guests and colleagues face-to-face (Chen et al., 2022; Sinclair et al., 2021; Alonso et al., 2020). For this hotel building design plays a significant role against the spreading of the novel coronavirus due to its features of providing fresh air, natural light to enhance the immunity and ability to resist viruses, best ventilation system, new

* Corresponding author.

E-mail address: dbangwal10@gmail.com (D. Bangwal).

<https://doi.org/10.1016/j.ijhm.2022.103212>

Received 25 March 2021; Received in revised form 16 March 2022; Accepted 26 March 2022

Available online 5 April 2022

0278-4319/© 2022 Elsevier Ltd. All rights reserved.

touchless technologies, controllable thermal settings, layout, size, healthy and safe workplace for maintaining social distancing (Kaklauskas et al., 2021; Bangwal, 2019b). These building features help to reduce the impacts of the virus on human health (Pinheiro and Luís, 2020). In a few studies, the employee reported fewer sick building syndrome symptoms, fewer respiratory symptoms, less absenteeism, fewer turnover, and better physical and mental health (Yu et al., 2020; Bangwal, 2019b; Allen et al., 2015). Unhealthy employees find it challenging to employ their creativity (Dunnagan et al., 2001) and are more likely to exhibit reduced work effectiveness (Gilmour and Patten, 2007; Jung and Yoon, 2018; Ram, 2018). In addition, it will cause absenteeism, low performance (Blackmore et al., 2007), which yields significant expenditure to the organization (Villanueva and Djurkovic, 2009).

Buildings design helps to minimize the impacts of COVID-19 on employee health and performance by decreasing the risk of contagion and preventing cross-infection. Because, if the hotel building can control the spreading of the virus, it provides mental relief to the employee, which further directly related his performance (Yu et al., 2020). It means buildings design, directly and indirectly, influences employee mental and physical health, directly by providing enhanced indoor environments at the individual level and indirectly by reducing the risk of getting the disease and enhancing the ability to resist viruses (Yu et al., 2020; Bangwal, 2019b; Dodo, 2020; Yudelson, 2008). Therefore, it is strategically vital for the hospitality organization to recognize hotel building design role in reducing the risk of disease transmission that may further affect employee mental health, physical health, and performance level. If yes, then what are the actions of linking? Numerous studies demonstrated the correlations between building design, occupant's health, satisfaction, and productivity (Awada et al., 2022; Lee et al., 2019; Samet and Spengler, 2003; Bangwal, 2019b). However, it shall be stated that this type of relationship has not yet been tested to solidly the effect of LEED-certified hotel building design on individual hospitality employee performance through the mediating role of mental and physical health during the COVID-19 pandemic. Thus, this study may help to amplify the knowledge about the "mediating effect" that hotel building design may have through mental and physical health on employee self-rated performance during the COVID-19 pandemic. By using the job demands-resources (JD-R) model (Bakker and Demerouti, 2014, 2017; Demerouti et al., 2001) and its recent variant, the environmental demands-resources (ED-R) model (Roskams and Haynes, 2020), we propose the relationship, which found impacts on an objective measure of health and employee self-rated performance— from exposure to three LEED-certified buildings. The building design, self-reported health, and performance of 302 participants in LEED-certified hotel buildings were tracked over the period of six months in India.

This paper aims to fill the research gap by identifying how hotel building design features can facilitate the mental & physical health and performance level of hotel employees in the outbreak situation of COVID 19 and contributes to the ongoing research about the role of the physical environment and its responses. Therefore, the outcome of this study provides valuable suggestions on how hotel business owners, policy-makers and operators can reduce health issues in the workplace and subsequently improve employee performance. Although many policies related to building design have emerged, it still requires to be further enhanced to reduce the risk of other health issues and epidemic.

2. Literature review

Today the world is facing a COVID-19 pandemic, and it may stay with us for years to come. Therefore, this will again bring the concept of building design in order to reduce the risk of coronavirus and other health issues not only today but also for a future outbreak. Furthermore, as COVID-19 spreads readily through social gathering, smaller airborne droplet nuclei take different shapes, and building design is one of the prevention steps to control (Dietz et al., 2020; Pinheiro and Luís, 2020;

Larsson, 2020). Thus, the concept of 'servicescape' is also used to enlighten the man-made physical environment in which service products are delivered (Bitner, 1992). This phenomenon has recently been discovered to be an essential component of employee and customer service satisfaction. In this sense, building design delivers a better indoor environment which then leads to more satisfied employees, which eventually influences the service quality of customers and better outcomes for their employees (Shen et al., 2021; Suh et al., 2015; Law et al., 2014; Lee and Jeong, 2012; Ruiz et al., 2012; Simpeh et al., 2011; Asadi et al., 2011).

The building design is the most comprehensive and emerging strategy to enhance the quality of life and reduce the building's impact on employee health and performance. In the current study, building design is defined as an ecological building, which has plentiful indoor air quality, natural light, controllable thermal settings, layout, size, healthy and safe workplace to reduce the impacts of the building on human health and performance (Yu et al., 2020; Cirrincione, 2020; Pietilä et al., 2015; Zeigler, 2012).

2.1. Leadership in energy & environmental design (LEED)

Leadership in energy & environmental design (LEED) is a commonly used rating system in the United States. LEED aims to reduce the environmental footprint of buildings while simultaneously protecting occupant comfort and health. They provide credits to new and existing buildings for adopting green design, operation, and maintenance. However, despite of the different rating systems, LEED is directly connected to individual occupant health. LEED standard follows a biological systems approach and includes health components such as natural air, natural light, proper ventilation, acoustics, and thermal comfort. These rating systems help to reduce carbon footprint, energy consumption and provide a high level of satisfaction & performance (Bangwal, 2017; Gou et al., 2016; Hui et al., 2015; Kuziemko, 2015; Forsythe and Wilkinson, 2015; Lo et al., 2014). Although in 2001, the Confederation of Indian Industry (CII) set up the Indian Building design Council (IGBC), it has adopted building design standards from USGBC for certifying building designs in India.

While the building design area has been investigated for more than decades, hardly any study had directed that investigate the role of building design features in the context of workspace and departmental space effectiveness in preventing COVID-19 transmission according to employees. Workspace is define as an area used or required for one's work. It can be an employee cabin, cubical, or workstation. For example, the hotel reservation team and sales team do not have direct contact with employees and guests. Departmental space is defined as an area of socialization and circulation, such as a hotel cafeteria and operational area (Bangwal et al., 2017). This study tried to investigate the direct and indirect potential relationship of building design (including workspace and departmental space effectiveness in preventing COVID-19 transmission) with employee performance by mediating the role of employee mental and physical health. Such links are sporadic in the Indian viewpoint. The management must be careful about their building design to take advantage of the yields of superior performance. It also encourages other organizations to rethink about their building design to improve employee health and performance. Some qualitative studies have highlighted the benefits of building design on occupant health and satisfaction (Boyce and Hunter, 2003; Choi et al., 2012; Seppänen et al., 2002). Drawing from the conceptual lenses of the job demands-resources (JD-R) model (Bakker and Demerouti, 2014, 2017; Demerouti et al., 2001) and its recent variant, the environmental demands-resources (ED-R) model (Roskams and Haynes, 2020). We hypothesize that the building design would significantly affect employee performance because the building design has similar or identical effects on employee performance as other job demands and resources (Roskam et al., 2021; Yu et al., 2020). According to the job demands-resources (JD-R) model theory, strain (i.e., health issues) is caused by a

mismatch between job demands (i.e., unfavorable building design/physical environment) and job resources (i.e., LEED-certified building design). As per the JD-R model, the existence of job demands (e.g., unfavorable building design/physical environment) can cause mental and physical health issues, leading to adverse employee outcomes such as lower employee performance (Bakker and Demerouti, 2014, 2017; Demerouti et al., 2001).

During the COVID-19 crisis, job resources are primarily focused on building design features that assist employees in minimising the negative impact of job demands (e.g., an unfavorable building design/physical environment) and their consequences (i.e., health issues and performance). LEED-certified building design makes the workplace more manageable by integrating nature into the employee workplace environment, which results, low mental and physical health issues, higher productivity, and improved employee performance. Hence, building design features may also function as environmental job resources. These resources activate a distinct motivational pathway, which boosts motivation and mitigates the effects of demands. In this way, environmental job resources (i.e., LEED-certified building design) support physical and mental health, which helps employees to perform better.

Additionally, the Hypothesis also draws upon the works of Nieuwenhuis et al. (2014), Raanaas et al. (2011), and Smith and Pitt (2009) that support the argument that biophilic designs have instorative effect and thus positively influence the various employee-related outcomes, including performance. All these studies view the physical environment as the resources or environmental resources that enhance the ability to cope with demands and/or higher levels of work engagement. Even though an unfavorable physical environment was identified as a potential job demand in the JD-R model, which is initially conceptualized (Demerouti et al., 2001), very few studies have clearly expressed building design with environmental factors as potential job demands or resources (Bangwal, 2019a). Therefore, this study tries to address these gaps by identifying the relationship of hotel building design features with employee self-rated performance of hotel employees in the outbreak situation of COVID 19 under the theoretical framework of the JD-R model and ED-R model.

Therefore, based on these arguments, we hypothesize.

H1. "Building design would significantly affect the employee performance".

2.2. Association between building design and health

In addition to the positive effect of building design on employee performance. The environmental demands-resources model supports a regenerative culture of wellbeing within organizations (Yu et al., 2020; Serafeim et al., 2020; McNeely, 2018; Wahl, 2016). Public health science and building science have proven that buildings design plays a significant part in our mental and physical health (MacNaughton et al., 2017; Weschler, 2009). According to Tennant (2007), mental health is employee feelings (e.g., mental depression and stress) and how it copes with everyday life difficulties. However, physical health is employee feelings regarding Insomnia, asthma, and other respiratory problems (Spence et al., 1987). The building design of any hospitality industry can affect the mental health and physical health of the employee due to the lack of fresh air, natural light, excess humidity, poor ventilation, cleanliness, hygiene, layout, and ergonomic design (Jablonska and Trocka-Leszczynska, 2020; Abdulaali et al., 2020; Amerio et al., 2020; Pietilä et al., 2015; Thatcher, 2012; Henneberger, 2006; Hoskins, 2003). These unfavorable conditions cause employee dissatisfaction, poor health, and less performance. The number of researchers and associations supports the positive benefits of building design. In 2018, International Interior Design Association (IIDA, 2018) and Business and Institutional Furniture Manufacturers Association (BIFMA, 2018) revealed a strong positive relationship between the building design and occupants' mental health. Another study has revealed that how building

design features such as acoustic, indoor air quality, layout, thermal, size, and ventilation also exhibited a higher level of performance (Yu et al., 2020; Geng et al., 2017; Leder et al., 2016), it protects the employee from unwanted noise through acoustical design (Jahncke, 2012), social distance between the employees by providing sufficient space and a building can also connect us to the nature (Da Silva et al., 2015). As we know that COVID-19 is a severe respiratory disease, and a building design with a sound ventilation system, good air quality, and sufficient workspace help to reduce statistically significant 23–76% in respiratory infections among the building occupants (Fisk, 2000). Few other studies also reported mental and physical health metrics with LEED-certified building design features. The study was conducted with 58 participants of renovated LEED-certified building and found a significant 8% improvement in occupants' health and a significant decrease in respiratory infections in 18 months. (Jacobs et al., 2014; Breyse et al., 2011). Building on the works of (e.g., Yu et al., 2020; Jablonska and Trocka-Leszczynska, 2020; Abdulaali et al., 2020; Amerio et al., 2020; Pietilä et al., 2015; Pereira et al., 2015; Da Silva et al., 2015; Thatcher, 2012; Jahncke, 2012; Thayer et al., 2010) and recommendations of International Interior Design Association (IIDA), Business and Institutional Furniture Manufacturers Association (BIFMA) and theoretical frameworks of the JD-R model (Bakker and Demerouti, 2014, 2017; Demerouti et al., 2001) and ED-R model (Roskams and Haynes, 2020), we hypothesize that building design would significantly affect employee mental and physical health. The environment demands-resources model along with SHINE (Sustainability and Health Initiative for Net-Positive Enterprise) model, highlight the importance of building design features as a key component of a regenerative work environment. Thus, we try to test it empirically through presenting the hypotheses, i.e., Building design would significantly affect employee mental health (H2a), and Building design would significantly affect employee physical health (H3a) in the context of the hospitality industry during COVID-19.

2.3. Association between employee health and performance

The existing literature recommends that performance can be measured in various ways, depending on the subject population and the type of study being conducted. In this study, we use the objective measurement to evaluate objective performance from the speed of task completion (such as service speed), quality of task, effectiveness, and absenteeism. Building designs produced consistent evidence that buildings design increased 28% of employee performance (Yu et al., 2020; Abdulaali et al., 2020; Thatcher and Milner, 2012) due to a reduction in absenteeism. However, the only reduction in absenteeism cannot improve employee performance, it can also be improved by giving quality of work while at work (presentism), and these conditions commonly occur when the employees are mentally and physically satisfied (Saah et al., 2021; Amerio et al., 2020; Pieper, 2019; Monzani, 2018; Karatepe, 2012). Even employees' mental and physical health influence one another (Parks et al., 2006). An employee with mental health issues is more likely to be experiencing physical health symptoms (Huang et al., 2020; Shigemura et al., 2020; Kang et al., 2020). An employee with chronic physical conditions has a 41% increased relative risk of having a mental condition (Katon and Sullivan, 1990), including poor diet, hypertension, asthma, diabetes, chronic pain and Alzheimer's disease (Shantanu and Kearsley, 2020; Sederer et al., 2006). These mental and physical health conditions decrease employee performance levels (Saah et al., 2021; Aguiar-Quintana et al., 2021; Pereira, 2015).

Burton et al. (2005) researched 28375 employees to identify the relationship between employee health and performance and found the unhealthy employees were 12.2% less productive than their counterparts. Various other researchers also investigate the relationship between health and performance (Yu et al., 2021; Tu et al., 2021; Saah et al., 2021; Aguiar-Quintana et al., 2021; Street and Lacey, 2019; Grawitch, 2017; Yang et al., 2008). For example, Dewa and Lin (2000) conducted a study using the Ontario Health Survey data and found that

employees suffering from mental and physical problems are less likely to show up for work and require more effort to function while at work relative to those who are mentally and physically fit (Khan et al., 2021; Teng et al., 2020; Pieper, 2019; Hemp, 2004).

Employee weak mental (e.g., depression and stress) and physical health (e.g., asthma and other respiratory problems) is one of the vital sources of less performance and, thus, are tremendously expensive to employers (Shani and Pizam, 2009; Goetzel, 2001). It has been estimated that more than \$80 billion is lost each year in loss of performance related to health issues (Mann, 1996). Thus, staying healthy is essential to the organization and its stakeholders, i.e., customers and employees. In the hospitality industry, it becomes necessary for the employee to stay mentally and physically healthy to provide better and safe services for increasing their demands in the market. Otherwise, it will decrease employee as well as organization performance (Wong et al., 2021; Tu et al., 2021; Pieper, 2019; Monzani, 2018; Grawitch, 2015; Evans et al., 2006; Faragher et al., 2005). Therefore, based on the previous works and drawing from the theoretical framework of environment demand – resources model, biophilia hypothesis (Ostner, 2021), and nudging philosophy (Venema and van Gestel, 2021) grounded in these theoretical frameworks, we propose the Hypothesis, employee mental health would significantly affect employee performance (H2b) and employee physical health would significantly affect employee performance (H3b).

3. Proposed research model and hypotheses

Based on the literature, we formulated the Hypothesis and conceptual model as shown in Fig. 1:

The conceptual model is composed of one exogenous latent variable, 'Building design (GBL)', represented by workspace and departmental space effectiveness in preventing COVID-19 transmission. One endogenous latent variable 'employee performance (EPM)' and two mediating variables' employee mental health (MHL)' and 'employee physical health (PHL)'. 'Building design (GBL)', represented by workspace and departmental space effectiveness in preventing COVID-19 transmission. One endogenous latent variable 'employee performance (EPM)' and two mediating variables' employee mental health (MHL)' and 'employee physical health (PHL)'. 'Building design (GBL)', represented by workspace and departmental space effectiveness in preventing COVID-19 transmission. One endogenous latent variable 'employee performance (EPM)' and two mediating variables' employee mental health (MHL)' and 'employee physical health (PHL)'.

4. Methodology

Three LEED-certified hotels are referred to herein as Vana Malsi Estate located in northern India, Uttarakhand, ITC Grand Chola located in southern India, Chennai, and JW Marriott located in western India, Mumbai were selected for conducting the study. ITC Grand Chola and Vana Malsi Estate is LEED Platinum certified, whereas JW Marriott is

LEED gold-certified Hotel by using a self-administered questionnaire with closed-ended items.

4.1. Questionnaire design

Due to the COVID-19 lockdown, an internet survey questionnaire was designed to facilitate users filling out on a mobile device. For developing the items for various constructs such as the employee performance was taken after ensuring by academicians and hospitality industry experts. The academicians hold the positions of Professor, Associate Professor, and Assistant Professor for teaching subjects related to hospitality management and similar. The hospitality industry experts include housekeeping manager, front office manager, F&B service manager, production manager, HR manager, and other departmental managers. Items of workspace and departmental space effectiveness in preventing COVID-19 transmission, which is used for building design were taken from the Center for the Built Environment (CBE) and Bangwal et al. (2017). For measuring mental and physical health, items of Warwick-Edinburgh (2007) and Spence et al.'s (1987) were used. Cronbach's alpha was used to ensure items' internal reliability and further validate by the discriminant and convergent validity by using AMOS v.26.

4.2. Data collection and instrument

During January-June 2020, questionnaires were distributed to respondents via the internal mail systems by using a random sampling method. Out of 450 questionnaires, 302 were used for investigation, and others were omitted due to partial information. In our case, the response rate was 67% that was noticeably high, and representative of the population studied. It is considered a satisfactory response rate of the questionnaire survey based on recommended practices as discussed in many published literature. To validate the conceptual model fitness, the collected data were analyzed by using structural equation modeling. The survey questionnaire was divided into five sections: the first section comprises employee demographic details, such as organization name, age, gender, and education. The second part included a description of building design, employee health, and performance. A five-point Likert scale was used to measure the items ranging from strongly disagree (represented by 1) to strongly agree (represented by 5).

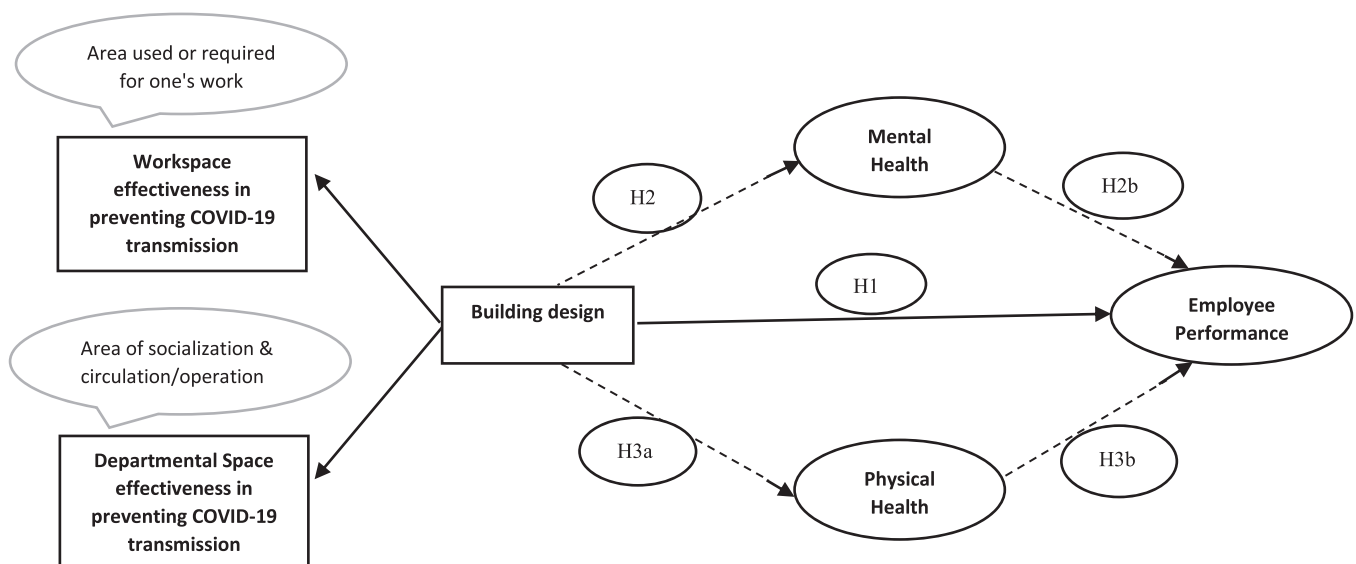


Fig. 1. Purposed research model and Hypothesis.

5. Data analysis and results

5.1. Sample characteristics

The demographic profile of the respondents shown in Table 1, out of 302 respondents, 61% were male, and 39% were female. Selected respondents who came under the full-time employee category were 93%, and part-time (industrial trainees) were 7%. In addition, 59% of respondents were falling in the age group of 30–40 years, 41% of respondents were falling in the age group of 40–50 years.

5.2. Structural equation modeling (SEM)

This multivariate statistical analysis technique is a combination of multiple regression analysis and confirmatory factor analysis (CFA). This statistical analysis technique has two mechanisms: measurement model and structural model.

5.2.1. The measurement model

In this study, to establish the proposed theoretical model, model fit, and to test the construct reliability and validity of the measurement model (Ifinedo, 2006), CFA was performed by adopting AMOS 26.0. The measurement model comprises five constructs, namely, Building design (GBL), which is represented by workspace effectiveness in preventing COVID-19 transmission (WRK) and departmental space effectiveness in preventing COVID-19 transmission (DMT), mental health (MHL), physical health (PHL), and employee performance (EPM). According to Sekaran (2003), the value of Cronbach's alpha ranging from 0.6 to 0.7 is reliable and above 0.7 consider as a good degree of reliability. As presented in Table 2, the value of Cronbach's alpha is above 0.7 and close to 0.9. It means the internal consistency of the measurement items was acceptable.

Composite reliability (C.R.) is used to measure the reliability of a construct in the measurement model (Bangwal, 2019a; Hair et al., 2010; Netemeyer, 2003). Table 2 shows that in the measurement model, Composite reliability (C.R.) of "WRK" is 0.971, "DMT" is 0.965, "MHL" is 0.972, "PHL" is 0.943 and "EPM" is 0.850, which is more than 0.7. Hence, all constructs have good reliability in the measurement model.

Convergent validity is a sub-type of construct validity. It is the extent to which an indicator relates to other indicators of the same phenomenon (Hair et al., 2019) to shows the degree to which indicators of a particular construct have a high percentage of variation in general (Hair et al., 2010). The convergent validity is calculated by standard factor loading, standard factor loadings are correlation coefficients between measured and latent variables. It shows that the indicator significantly represents the latent variables. Above 0.50 is the acceptable value of standard factor loading (Hair et al., 2010). As presented in Table 2, the standard factor loading of the measured variable falls between 0.75 and 0.95. It means the measured variables are acceptable and proportionate to their latent variable. Thus, the convergent validity should be confirmed.

Discriminant validity shows that the degree to individual construct differs from other constructs (Hair et al., 2010). Discriminant validity is considered reliable when average variances extracted (AVE) of the particular constructs are always more than the average shared variances

Table 1
Demographic profile of the sample.

Variable	Categories	Frequency (n=302)	Response %
Gender	Male	185	61
	Female	117	39
Age Group	30–40	177	59
	40–50	125	41
Employment	Full-time	282	93
	Part-time	20	7

(ASV) between the constructs, and the level of square root AVE should be greater than the correlation involving the constructs. "WRK" has low positive correlation with "MHL", "PHL" and "EPM" (0.52, 0.18, and 0.27), similarly, "DMT" has low positive correlation with "MHL", "PHL" and "EPM" (0.13, 0.05 and 0.01). It shows that all the variables are independent in the measurement model. Table 2, shows that the particular constructs AVE are more than the ASV.

In Table 3, the square roots of the AVEs are more than the off-diagonal elements in the related rows and columns go above the correlation between a specified construct, this shows that in the measurement model, a construct is more strongly correlated with its indicators as compared to the other construct. Therefore, we can determine that constructs discriminant validity is acceptable.

Table 4. shows the summary of goodness-of-fit indices for the measurement model. The model fit indices such as the comparative fit index, goodness of fit index, normed fit index, Tucker Lewis index, and root mean square of error approximation were considered to determine the model fit (Hair et al., 2010). To get the model fit the standard values of $\chi^2/df < 3$, CFI, GFI, NFI and TLI > 0.9 and the RMSEA < 0.08 (Gefen and Straub, 2000). The result shows that we can proceed to test the structural model.

5.2.2. Structural model

The purpose of testing the structural model was to examine the hypothesised conceptual research model. Table 5, depicts the goodness-of-fit for the model and the structural model properties such as Standard error, standard path coefficients (b), critical ratio, and proposed hypotheses result. It indicates that our structural model is accepted to examine the hypotheses.

5.3. Mediation analysis

This study carried out a Parallel mediation analysis to test the mechanism between an independent variable and an outcome after including a third hypothetical variable, which we called a mediating variable. This study considers two mediating variables that are not causally interrelated. Therefore, we called it parallel mediation (Hayes, 2013). Parallel mediation allows investigators to investigate different mediation theories concurrently in a model (Guevarra and Howell, 2015). The path theory implicit three structural paths, one from GBL → EPM without Mediating variables, Second from GBL → MHL → EPM and third GBL → PHL → EPM with mediating variable. The significant mediation is supported via GBL → MHL → EPM; however, the other meditational path, i.e. GBL → PHL → EPR is also supported as shown in Table 7.

5.3.1. Test of direct and indirect effect

As shown in Fig. 2. Hypothesis 1 proposed that building design would significantly affect employee performance. Results of the SEM support this Hypothesis ($\beta = .56$, $t = 4.53$, $p < .001$), indicating that LEED-certified building employees tend to be satisfied with their performance.

After running the structural model with mediating variable, the standardised path coefficient (β) from GBL → EPM was reduced by a non-trivial amount ($\beta = 0.44$) though still significant; thus, the mediation analysis supports the partial mediation.

In addition to direct relationships, indirect relationships of mediating variables, i.e., employee mental health and employee physical health, were also estimated, as shown in Fig. 3.

The path via GBL → MHL → EPM exhibit statistically significant indirect effects on EPM through employee mental health ($z = 4$, $p < 0.001$). Hypothesis H2a postulated a positive relationship between building design and employee mental health, employees experience more mentally fit while working inside the building after the COVID-19 pandemic and significantly supporting the Hypotheses H2a. As shown in Table 6 model 2, The path (Direct effect) from GBL to MHL was positive

Table 2
Reliability, discriminant validity, convergent validity, composite reliability (C.R.) and factor loadings of the items.

Construct	Items	AVE	ASV	CR	Cronbach Alpha	Standardized Factor loadings
Workspace effectiveness in preventing COVID-19 transmission	WP1	0.871	0.1	0.971	0.971	0.927
	WP2					0.94
	WP3					0.929
	WP4					0.935
	WP5					0.936
Departmental space effectiveness in preventing COVID-19 transmission	DP1	0.872	0.01	0.965	0.958	0.902
	DP2					0.943
	DP3					0.944
	DP4					0.946
	DP5					0.941
Mental health	MH1	0.873	0.076	0.972	0.871	0.928
	MH2					0.941
	MH3					0.93
	MH4					0.936
	MH5					0.936
Physical health	PH1	0.768	0.092	0.943	0.943	0.82
	PH2					0.935
	PH3					0.919
	PH4					0.89
	PH5					0.81
Performance	PM1	0.534	0.104	0.85	0.842	0.764
	PM2					0.757
	PM3					0.777
	PM4					0.747
	PM5					0.771

Table 3
Correlation matrix and root of AVE's.

	EPM	WRK	DMT	MHL	PHL
EPM	<i>0.731</i>				
WRK	0.27	<i>0.933</i>			
DMT	0.008	0.147	<i>0.934</i>		
MHL	0.12	0.522	0.133	<i>0.934</i>	
PHL	0.575	0.183	-0.045	0.018	<i>0.876</i>

Note: Diagonal in italics represent the square root of AVE from observed variance (items); off-diagonal represents the correlation between constructs

Table 4
Summary of goodness-of-fit indices for measurement model.

Model Fit Index	χ^2/df	CFI	GFI	NFI	TLI	RMSEA
Model	2.444	0.965	0.885	0.943	0.961	0.062

Table 5
Summary of goodness-of-fit indices for Structural model.

Model Fit Index	χ^2/df	CFI	GFI	NFI	TLI	RMSEA
Model	1.686	0.972	0.918	0.934	0.969	0.042

and statically significant ($b = .765$, $s.e. = .0556$ $p < .001$). However, Hypothesis H2b, which proposed that employee mental health would significantly affect employee performance, was also supported, therefore employee mental health positively leads to employee performance. As shown in Table 6 model 3, the path (Direct effect) from GBL to EPM was positive and statically significant ($b = .8478$, $s.e. = .0627$ $p < .001$), indicating that building design employees are more mentally healthy. Also the direct effect of MHL to EPM is positive and significant ($b = .2257$, $s.e. = .0343$ $p < .001$).

In turn, the path via $GBL \rightarrow PHL \rightarrow EPM$, the statistically significant indirect relationship was found between GBL and EPM through employee physical health ($z = -2$, $p < 0.001$). Hypothesis H3a addressed that building design would significantly affect employee physical health; as expected, hotel building employees experience that building design support to access their work comfortably during COVID-19 and significantly support the hypothesis H3a. As shown in Table 6

model 1, the path (Direct effect) from GBL to PHL was positive and statically significant ($b = 1.205$, $s.e. = .0610$ $p < .001$). As shown in Table 6 model 3, the path (Direct effect) from GBL to EPM was positive and statically significant ($b = .8478$, $s.e. = .0627$ $p < .001$), indicating that employees feel more physically fit inside the building. The direct effect of PHL to EPM is negative but significant ($b = -.2361$, $s.e. = .0313$ $p < .001$). Thus, our Hypothesis H3b, which stated employee physical health would significantly affect employee performance, is also supported.

As shown in Table 6, the Direct and Indirect effects of X on Y. If Zero falls within the LICI and ULCI, then null Hypothesis is accepted, which is Zero and insignificant. In this case, PHL and MHL are both significant. Whereas total effect is insignificant as Zero falls within the limit of LI and U.L., it means both mediators have the mediation effect. In this case the indirect effect of GBL via PHL (IE = $-.2845$) is negative and statically significant (As '0' fall within the confidence interval): 95% CI = ($-.3684$, $-.2028$) and indirect effect of GBL via MHL (IE = $.1728$) is positive and statically significant: 95% CI = ($.1129$, $.2373$).

The outcome of hypothesis testing is indicated in Table 7.

6. Discussion and recommendation

As discussed before, employee satisfaction and health is the most important factors for the hospitality industries during COVID 19. Hospitality industries understand the value of employee satisfaction and health because it improves loyalty and preference and eventually increases the organizational image and ultimately the organization's profit. However, this is only possible if the employee is mentally and physically satisfied in their workplace. Then, they can treat their customers more pleasantly and ensure a superior level of service. For this, we chose three LEED-certified hotels in India. The results confirmed that the employees of LEED-certified buildings show their agreement that the hotel building design had positively affected their performance during the COVID-19 pandemic because they felt that the building design is compatible enough to prevent them from spreading coronavirus. It gives them a mental and physical relaxation. These outcomes are significant in light of fact that organizations have confidence in building design and felt the necessity of building design to improve employee health and performance to fight with situation like COVID-19. Therefore, the hospitality industries, who design their building as per the LEED standards, should generate higher employee performance due to its building design

Table 6
Mediation Analysis: Mediating role of MHL and PHL on the relationship of GBL→EPM.

OUTCOME VARIABLE: PHL							
Model 1 Summary							
Model	R	R-sq	MSE	F	df1	df2	p
	.7118	.5066	.2538	390.1495	1.0000	380.0000	.0000
	coeff	se	t	p	LLCI	ULCI	
constant	.0000	.0258	.0000	1.0000	-.0507	.0507	
GBL	1.2051	.0610	19.7522	.0000	1.0852	1.3251	
OUTCOME VARIABLE: MHL							
Model 2 Summary							
Model	R	R-sq	MSE	F	df1	df2	p
	.5768	.3327	.2110	189.4661	1.0000	380.0000	.0000
	coeff	se	t	p	LLCI	ULCI	
constant	.0000	.0235	.0000	1.0000	-.0462	.0462	
GBL	.7657	.0556	13.7647	.0000	.6563	.8750	
OUTCOME VARIABLE: EPM							
Model 3 Summary							
Model	R	R-sq	MSE	F	df1	df2	p
	.7729	.5973	.0873	186.9121	3.0000	378.0000	.0000
	coeff	se	t	p	LLCI	ULCI	
constant	.0000	.0151	.0000	1.0000	-.0297	.0297	
GBL	.8478	.0627	13.5291	.0000	.7246	.9710	
PHL	-.2361	.0313	-7.5529	.0000	-.2976	-.1746	
MHL	.2257	.0343	6.5817	.0000	.1583	.2931	
DIRECT AND INDIRECT EFFECTS OF X ON Y							
Direct effect of X on Y							
Effect	se	t	p	LLCI	ULCI	c'_ps	c'_cs
.8478	.0627	13.5291	.0000	.7246	.9710	1.8281	.7733
Indirect effect(s) of X on Y:							
	Effect	BootSE	BootLLCI	BootULCI			
TOTAL	-.1118	.0584	-.2268	.0050			
PHL	-.2845	.0424	-.3684	-.2028			
MHL	.1728	.0314	.1129	.2373			

Table 7
Summary of testing hypothesis.

Hypothesis	Structural Relationship			St. Est (β)	Unst. Est (β)	P	Result	
H1	Direct Effect	EPM	β	GBL	0.56	0.47	P < .001	Supported
	Indirect Effect	EPM	β	GBL	0.44	0.4	P < .001	
H2a		MHL	β	GBL	0.47	0.53	P < .001	Supported
H2b		EPM	β	MHL	0.39	0.32	P < .001	Supported
H3a		PHL	β	GBL	0.59	0.86	P < .001	Supported
H3b		EPM	β	PHL	-0.123	-0.078	P < .001	Supported

Notes: β, standardized beta coefficients; *p < 0.05; **p < 0.01; ***p < 0.001

features, which provide a healthier workplace.

COVID-19 pandemic has changed the way of living, interaction, and working. COVID-19 increased the need of a healthy workplace, built environment, buildings, and offices, where the employee can maintain physical distancing and hygiene to be mentally and physically healthy. This makes sense as a certified building designed to improve employee comfortability and privacy by reducing the possibility of virus transmission, unwanted microorganisms, overhear conversations and providing visual privacy, proper space, thermal comfort, natural air, and light (GBCA, 2013; Kim and de Dear, 2013; Schiavon and Altomonte, 2014). Such initiatives provide a healthy platform for employee health and performance and develop new innovative approaches that will help in environmental and business sustainability.

The finding suggests that during this uncertain and unsustainable era, organization building design features will bring a sustainable value to our employees' mental and physical wellbeing. Hospitality organizations need to identify the importance of building design for sustainable development. Organizations building design can provide such a working platform, which reduces employee stress and absenteeism and

boosts its health and performance. It is recommended to the stockholder, shareholder, building designer, architect, and engineers to understand what makes employees happy at work while following building design and construction. Because to work and stay in a safe and healthy working environment is the right of every individual and without the occupants mental and physical satisfaction within the building. No one can perform better (Gou et al., 2016).

6.1. Practical implication

There is some agreement as to how buildings, i.e., enclosed spaces where the number of occupants, either customers and employees, are brought together, are possible vectors for the transmission of infectious diseases like COVID-19, whether by airborne transmission or by aerosolised particles. With the advance of the COVID-19 pandemic, various temporary mitigation measures are already taken, such as closing schools, universities, and hotels, but we need a potential solution to stop this transmission. The building design is one of the prevention to protect occupants.

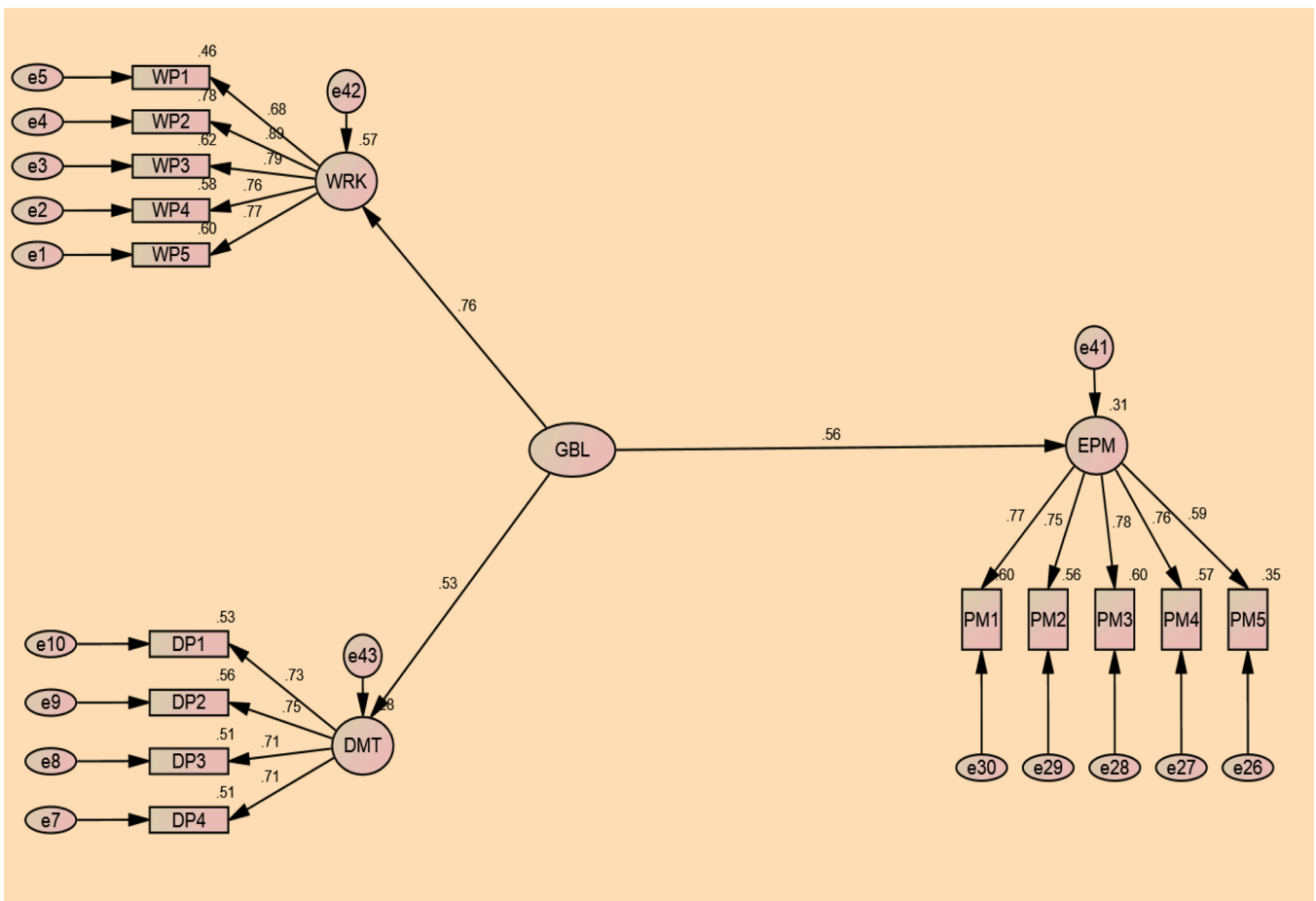


Fig. 2. Structural model (without mediating variable).

Even before the COVID-19 pandemic, hospitality employees spent the maximum of their time in the building. So that we need a radically new take on the building design. When building design, which directly affects the health and performance of the employee, is compromised, employees become more exposed to various syndromes that can be worsened by both economic and social factors in India. The expected yearly cost associated to sick building syndrome in commercial place of work is between \$10 billion and \$70 billion in the USA. This study suggest that the hospitality industry can improve employee mental and physical satisfaction and increase employee performance by focusing on their building design. While designing building structure, organizations and architecture designers think more about the cost that is always been important during building planning, whereas occupant cost is much higher than the cost of building construction and design. Therefore it is recommended to the hospitality industry leaders, public health experts, policymakers, researchers, practitioners and designers to think more about building design priorities, where occupants will connect to nature, able to find natural air, light, privacy, sufficient workspace for maintaining social distancing and promoting the importance of building design in maintaining physical and mental wellbeing in healthier working places.

6.2. Theoretical implication

The current study makes a significant theoretical contribution to the ongoing research about the physical environment and its responses by assessing how hospitality employees perceive hotel building design to mitigate the health risk of contracting the COVID virus in their workplace and further how it is associated with employee self-rated

performance. After the COVID-19, many studies have been conducted in the hospitality sector about the safety of hospitality employees (Zhang et al., 2020) through cleanliness and hygiene (Byrd et al., 2021; Yu et al., 2021). However, little attention has been paid to how hotel building design acts as an important resource to reduce the risk of COVID-19 virus infection among hospitality employees.

As the COVID-19 situation becomes controllable, employees still feel unsafe in their workplace (Gralinski and Menachery, 2020). One of the challenges is maintaining social distance to protect the safety of customers and employees while at work. It requires a low level of social contact was regarded as a solution for service industries (Chen et al., 2022; Sinclair et al., 2021; Alonso et al., 2020). Some studies support physical environment, satisfaction, and productivity integration (Choi et al., 2012; Bangwal et al., 2017; Schiavon and Altomonte, 2014; Newsham et al., 2013; Altomonte and Schiavon, 2013; Menadue et al., 2013; Thatcher and Milner, 2012; Yang et al., 2010). The current study complements these efforts by further unveiling the dilemma faced by hospitality employees during the COVID-19 pandemic. The current study help to recognize how we can ensure proper building design to mitigate health risks among hospitality employees in the hotel buildings. After the COVID-19 pandemic, this field of research seems to have grown in importance as many people suffer, especially hospitality employees who lost their jobs and health. This study also brings additional insights by introducing employees' mental and physical health as an imperative intervening construct between building design and employee performance. It was found that hospitality employees' mental and physical health strongly contributed to employee self-rated performance during the COVID-19 pandemic.

Our results recommend that when hospitality management and

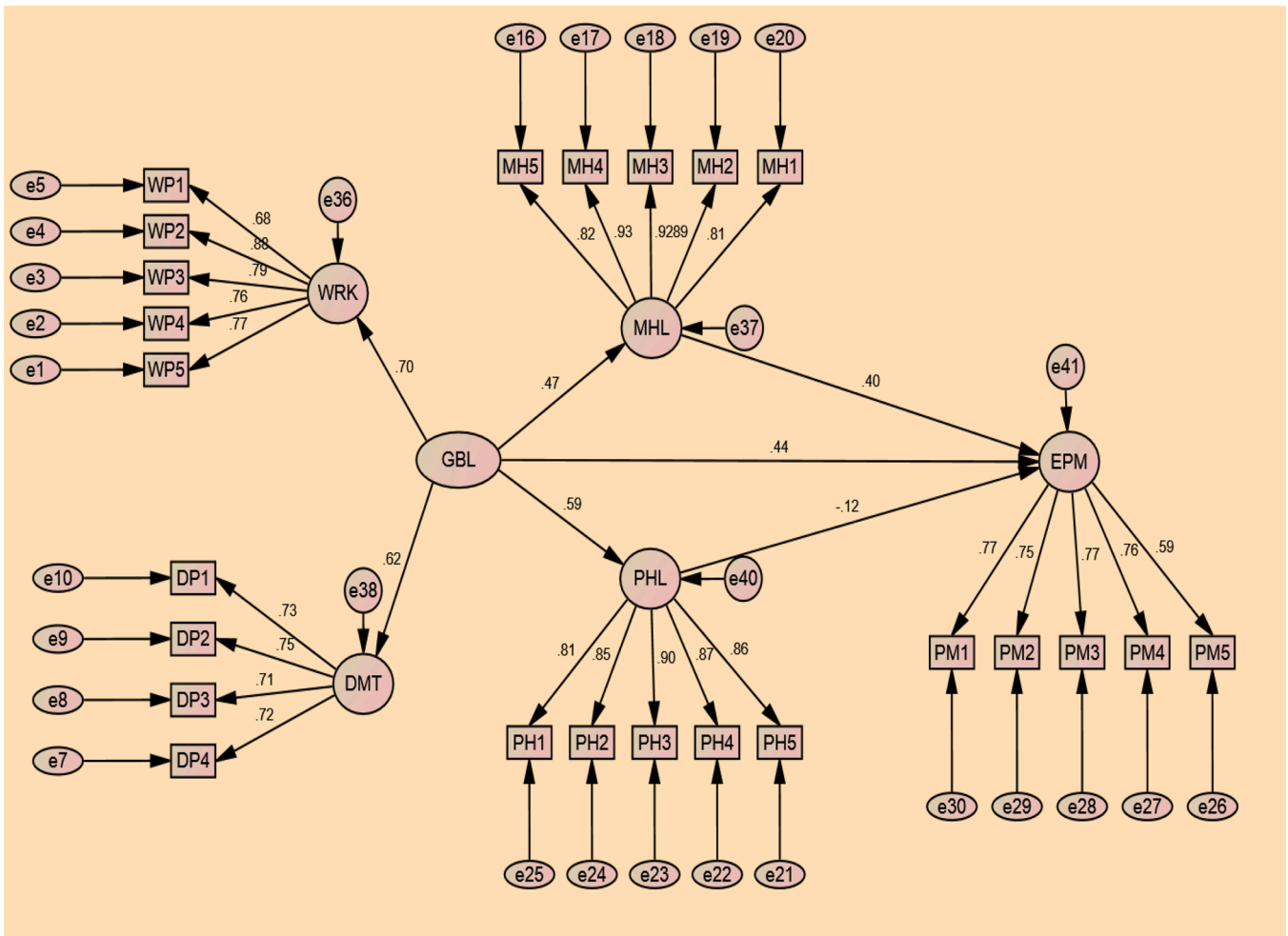


Fig. 3. Structural model (with mediating variable).

administration are convinced from the prominence of building design features, then, they perform a facilitator role. In order to get better employee performance and productivity, the hospitality industry requires to motivate their employees by providing a green workplace for a healthy and satisfactory outcome and creating a sense of accountability among employees towards the workplace environment. Such initiatives not only influence employee satisfaction but also influence the hospitality industry's image.

7. Conclusion

The COVID-19 pandemic has changed many aspects of our lives and is offering an opportunity to change how we design our buildings and working spaces. A comfortable and healthy building is an important contributor to mental and physical health. This study presents a need of changes in the sustainability requirements for buildings design that can be proper sanitization system to weaken the possibility of getting infected, new touchless technologies, sufficient spaces for better mental health, proper waste management system, are just a few solutions that can improve health and safety protection in our building.

Appendix 1

The building design is a fascinating and emerging concept, but its relationship with employees' health and performance during COVID-19 is not well acknowledged yet in the field of the tourism and hospitality sector. Building designers and architects need to make bold decisions to provide safe and healthy to end-users. Building design is becoming an increasingly important part of making our environment and employee greener and healthier for a better future.

7.1. Limitations and Future Research

Finally, although the study has reached its aim and got evidence to support the research hypotheses, there were some inescapable limitations. First, because of the large-scale outbreaks of infectious disease COVID-19 that create fear and mortality all across the globe, this research was conducted only in the selected geographical area in India. Secondly, we collect small sample sizes that increase type II error chance. Finally, there will be a need to check the spill-over effect of mental and physical health on employee performance across other industries in the future.

Construct	Items	Scale developed by
Workspace effectiveness in preventing COVID-19 transmission	Satisfaction with the amount of space required for individual work in COVID-19 Workspaces design help to reduce transmission of microorganisms/viruses during COVID-19 Satisfied with the Air Quality in the workspace to reduce the potential airborne transmission of the virus Satisfied with the temperature screening in the workspace to prevent and control COVID-19 Have enough cleanliness in the workspace to lower the risk of infection.	Bangwal et al. (2017)
Departmental space effectiveness in preventing COVID-19 transmission	Satisfied with the space required for maintaining social distance during COVID-19 Have easy access to equipment without direct contact with others during COVID-19 The layout of departmental space supports socialization/operation during COVID-19 Satisfaction with the ease of interaction with co-workers with proper distancing during COVID-19	Bangwal et al. (2017)
Mental health	This building design help to minimize the stress level during COVID-19 The building design reduces the risk of depression during COVID-19 During COVID-19, I have been feeling relaxed while working inside the building The building design reduces the risk of infection during COVID-19 This building helps to minimize health anxiety during COVID 19	Warwick-Edinburgh, (2007)
Physical health	The building reduces the risk of respiratory problems The building reduces the risk of contagious viral infection (That made you feel uncomfortable) Building design makes me feel physically healthy Building design helps to minimize the chance of headache which occur due to poor ventilation in the workplace Building design reduces the risk of Insomnia	Spence et al.'s (1987)
Performance	During COVID-19, Building design foster a positive, healthy work environment, which reduce my absenteeism During COVID-19, I feel mentally and physically healthy with building design, it directly helps me to complete my task in time During COVID-19, I feel mentally and physically healthy with building design, which helps to improve my quality of work During COVID-19, Building design provides the best indoor environment quality to perform effectively During COVID-19, Building design provides the best indoor environment quality to work with full capacity	Scale developed through discussion with experts from academics and industry

References

- Abdulaali, H., Hanafiah, M.M., Usman, I.M.S., Nizam, U.M., Abdulhasan, M.J., 2020. A review on green hotel rating tools, indoor environmental quality (IEQ) and human comfort. *Int. J. Adv. Sci. Technol.* 29 (3), 128–157.
- Aguiar-Quintana, T., Nguyen, T.H.H., Araujo-Cabrera, Y., Sanabria-Díaz, J.M., 2021. Do job insecurity, anxiety and depression caused by the COVID-19 pandemic influence hotel employees' self-rated task performance? The moderating role of employee resilience. *Int. J. Hosp. Manag.* 94, 102868.
- Allen, J.G., MacNaughton, P., Laurent, J.G.C., Flanagan, S.S., Eitland, E.S., Spengler, J.D., 2015. Green buildings and health. *Curr. Environ. Health Rep.* 2 (3), 250–258.
- Alonso, A.D., Kok, S.K., Bressan, A., O'Shea, M., Sakellarios, N., Koresis, A., Solis, M.A.B., Santoni, L.J., 2020. COVID-19, aftermath, impacts, and hospitality firms: an international perspective. *Int. J. Hosp. Manag.* 91, 102654.
- Altomonte, S., Schiavon, S., 2013. Occupant satisfaction in LEED and non-LEED certified buildings. *Build. Environ.* 68, 66–76.
- Amerio, A., Brambilla, A., Morganti, A., Aguglia, A., Bianchi, D., Santi, F., Costantini, L., Odone, A., Costanza, A., Signorelli, C., Serafini, G., Amore, M., Capolongo, S., 2020. COVID-19 lockdown: housing built environment's effects on mental health. *Int. J. Environ. Res. Public Health* 17 (16), 5973.
- Asadi, E., Costa, J.J., da Silva, M.G., 2011. Indoor air quality audit implementation in a hotel building in Portugal. *Build. Environ.* 46 (8), 1617–1623.
- Awada, M., Becerik-Gerber, B., White, E., Hoque, S., O'Neill, Z., Pedrielli, G., Wen, J., Wu, T., 2022. Occupant health in buildings: impact of the COVID-19 pandemic on the opinions of building professionals and implications on research. *Build. Environ.* 207, 108440.
- Bakker, A.B., Demerouti, E., 2014. Job demands-resources theory. In: Chen, P.Y., Cooper, C.L. (Eds.), *Work and Wellbeing*. Wiley Blackwell, Hoboken, NJ, pp. 37–64.
- Bakker, A.B., Demerouti, E., 2017. Job demands-resources theory: taking stock and looking forward. *J. Occup. Health Psychol.* 22 (3), 273–285.
- Bangwal, D., Tiwari, P., 2019a. Environmental design and awareness impact on organization image. *Eng., Constr. Archit. Manag.* 26 (1), 29–45.
- Bangwal, D., Tiwari, P., 2019b. Workplace environment, employee satisfaction and intent to stay. *Int. J. Contemp. Hosp. Manag.* 31 (1), 268–284.
- Bangwal, D., Tiwari, P., Chamola, P., 2017. Workplace design features, job satisfaction, and organization commitment. *J. Workplace Rights* 7 (3), 1–27.
- BIFMA, 2018. About BIFMA. Retrieved April 17th, 2010 from (www.bifma.org).
- Bitner, M.J., 1992. Servicescapes: the impact of physical surroundings on customers and employees. *J. Mark.* 56 (2), 57–71.
- Blackmore, E.R., Stansfeld, S.A., Weller, I., Munce, S., Zagorski, B.M., Stewart, D.E., 2007. Major depressive episodes and work stress: results from a national population survey. *Am. J. Public Health* 97 (11), 2088–2093.
- Boyce, P., Hunter, C., 2003. The Benefits of Daylight Through Windows. Lighting Research Center. Rensselaer Polytechnic Institute, Troy, NY.
- Breyse, J., Jacobs, D.E., Weber, W., Dixon, S., Kaweck, C., Aceti, S., Lopez, J., 2011. Health outcomes and green renovation of affordable housing. *Public Health Rep.* 126 (1 suppl) 64–75.
- Burton, W.N., Chen, C.Y., Conti, D.J., Schultz, A.B., Pransky, G., Edington, D.W., 2005. The association of health risks with on-the-job productivity. *J. Occup. Environ. Med.* 47 (8), 769–777.
- Byrd, K., Her, E., Fan, A., Almanza, B., Liu, Y., Leitch, S., 2021. Restaurants and COVID-19: what are consumers' risk perceptions about restaurant food and its packaging during the pandemic? *Int. J. Hosp. Manag.* 94, 102821.
- Chen, C.C., Zou, S., Chen, M.H., 2022. The fear of being infected and fired: examining the dual job stressors of hospitality employees during COVID-19. *Int. J. Hosp. Manag.* 102, 103131.
- Choi, J.H., Loftness, V., Aziz, A., 2012. Post-occupancy evaluation of 20 office buildings as basis for future IEQ standards and guidelines. *Energy Build.* 46, 167–175.
- Cirincione, L., Plescia, F., Ledda, C., Rapisarda, V., Martorana, D., Moldovan, R.E., Theodoridou, K., Cannizzaro, E., 2020. COVID-19 pandemic: prevention and protection measures to be adopted at the workplace. *Sustainability* 12 (9), 3603.
- Confederation of Indian Industry, 2020. Impact of COVID-19 on Hospitality Sector - Estimated Revenue Losses. Retrieved from <https://www.cii.in/PublicationDetail.aspx?enc=6/lnlra7c1XIKPU005MvJTWrtv6LPYFaLAzELIKJ5I>.
- Da Silva, N.A.F., Wargocki, P., Tham, K.W., 2015. Building Certification Schemes and the Quality of Indoor Environment. DTU Civil Engineering Report R335. Technical University of Denmark, Department of Civil Engineering, Denmark.
- Demerouti, E., Bakker, A.B., Nachreiner, F., Schaufeli, W.B., 2001. The job demands-resources model of burnout. *J. Appl. Psychol.* 86 (3), 499–512.

- Dewa, C.S., Lin, E., 2000. Chronic physical illness, psychiatric disorder and disability in the workplace. *Soc. Sci. Med.* 51 (1), 41–50.
- Dietz, L., Horve, P.F., Coil, D.A., Fretz, M., Eisen, J.A., Van Den Wymelenberg, K., 2020. 2019 novel coronavirus (COVID-19) pandemic: built environment considerations to reduce transmission. *mSystems* 5 (2), e00245–20.
- Dodo, Y., 2020. Green buildings: a post COVID-19 analysis of preventive measures of spreading the virus. In: International Conference "Innovative Trends in Engineering & Management (ITEM-2020).
- Dunnagan, T., Peterson, M., Haynes, G., 2001. Mental health issues in the workplace: a case for a new managerial approach. *J. Occup. Environ. Med.* 43 (12), 1073–1080.
- Evans, S., Huxley, P., Gately, C., Webber, M., Mears, A., Pajak, S., Medina, J., Kendall, T., Katona, C., 2006. Mental health, burnout and job satisfaction among mental health social workers in England and Wales. *Br. J. Psychiatry* 188 (1), 75–80.
- Faragher, E.B., Cass, M., Cooper, C.L., 2005. The relationship between job satisfaction and health: a meta-analysis. *Occup. Environ. Med.* 62 (2), 105–112.
- Fisk, W.J., 2000. Estimates of potential nationwide productivity and health benefits from better indoor environments: an update. Lawrence Berkeley national laboratory report. In: Spengler, J.D., Samet, J.M., McCarthy, J.F. (Eds.), *Indoor Air Quality Handbook*. McGraw Hill, New York, NY, pp. 1–38.
- Forsythe, P., Wilkinson, S., 2015. Measuring office fit-out changes to determine recurring embodied energy in building life cycle assessment. *Facilities* 33 (3/4), 262–274.
- GBCA, 2013. Business Benefits Productivity. Retrieved from (www.gbca.org.au/green-star/what-is-green-star/business-benefits-productivity/2225.htm).
- Gefen, D., Straub, D., 2000. The relative importance of perceived ease of use in IS adoption: a study of e-commerce adoption. *J. Assoc. Inf. Syst.* 1 (1), 1–30.
- Geng, Y., Ji, W., Lin, B., Zhu, Y., 2017. The impact of thermal environment on occupant IEQ perception and productivity. *Build. Environ.* 121, 158–167.
- Gilmour, H., Patten, S., 2007. Depression at work. *Perspect. Labour Income* 19 (4), 57.
- Goetzl, R.Z., Long, S.R., Ozminowski, R.J., Hawkins, K., Wang, S., Lynch, W., 2001. Health, absence, disability, and presenteeism cost estimates of certain physical and mental health conditions affecting U.S. employers. *J. Occup. Environ. Med.* 46 (4), 398–412.
- Gössling, S., Scott, D., Hall, C.M., 2020. Pandemics, tourism and global change: a rapid assessment of COVID-19. *J. Sustain. Tour.* 29 (1), 1–20.
- Gou, Z., 2016. Green building for office interiors: challenges and opportunities. *Facilities* 34 (11/12), 614–629.
- Gralinski L.E., Menachery, V.D., 2020. Return of the Coronavirus: 2019-nCoV. *Viruses* 12(2),135. doi:10.3390/v12020135. PMID: 31991541; PMCID: PMC7077245.
- Grawitch, M.J., Ballard, D.W., Erb, K.R., 2015. To be or not to be (stressed): the critical role of a psychologically healthy workplace in effective stress Management. *Stress Health* 31 (4), 264–273.
- Grawitch, M.J., Waldrop, J.S., Erb, K.R., Werth, P.M., Guarino, S.N., 2017. Productivity loss due to mental- and physical-health decrements: distinctions in research and practice. *Consulting Psychology: J. Pract. Res.* 69 (2), 112–129.
- Guan, W.J., Ni, Z., Hu, Y., Liang, W., Ou, C., He, J., Liu, L., Shan, H., Lei, C., Hui, D.S.C., Du, B., Li, L., Zeng, G., Yuen, K.Y., Chen, R., Tang, C., Wang, T., Chen, P., Xiang, J., Li, S., Wang, J., Liang, Z., Peng, Y., Wei, L., Liu, Y., Hu, Y., Peng, P., Wang, J., Liu, J., Chen, Z., Li, G., Zheng, Z., Qiu, S., Luo, J., Ye, C., Zhu, S., Zhong, N., 2020. Clinical characteristics of coronavirus disease 2019 in China. *N. Engl. J. Med.* 382 (18), 1708–1720.
- Guevarra, D.A., Howell, R.T., 2015. To have in order to do: exploring the effects of consuming experiential products on well-being. *J. Consum. Psychol.* 25 (1), 28–41.
- Guo, Y.R., Cao, Q.D., Hong, Z.S., Tan, Y.Y., Chen, S.D., Jin, H.J., Tan, K.S., Wang, D.Y., Yan, Y., 2020. The origin, transmission and clinical therapies on coronavirus disease 2019 (COVID-19) outbreak – an update on the status. *Mil. Med. Res.* 7 (1), 11.
- Gursoy, D., Chi, C.G., 2020. Effects of COVID-19 pandemic on hospitality industry: review of the current situations and a research agenda. *J. Hosp. Mark. Manag.* 29 (5), 527–529.
- Hair, J.F., Black, B., Babin, B., Anderson, R.E., Tatham, R.L., 2010. *Multivariate Data Analysis: A Global Perspective*. Pearson Education, Upper Saddle River, NJ.
- Hair, J.F., Risher, J.J., Sarstedt, M., Ringle, C.M., 2019. When to use and how to report the results of PLS-SEM. *Eur. Bus. Rev.* 31 (1), 2–24.
- Hayes, A.F., Scharckow, M., 2013. The relative trustworthiness of inferential tests of the indirect effect in statistical mediation analysis. *Psychol. Sci.* 24 (10), 1918–1927.
- Hemp, P., 2004. Presenteeism: at work—but out of it. *Harv. Bus. Rev.* 82 (10), 49–58 (155).
- Henneberger, P.K., Derk, S.J., Sama, S.R., Boylstein, R.J., Hoffman, C.D., Preusse, P.A., Rosiello, R.A., Milton, D.K., 2006. The frequency of workplace exacerbation among health maintenance organisation members with asthma. *Occup. Environ. Med.* 63 (8), 551–557.
- Hoskins, J.A., 2003. Health effects due to indoor air pollution. *Indoor Built Environ.* 12 (6), 427–433.
- Huang, C., Wang, Y., Li, X., Ren, L., Zhao, J., Hu, Y., Zhang, L., Fan, G., Xu, J., Gu, X., Cheng, Z., Yu, T., Xia, J., Wei, Y., Wu, W., Xie, X., Yin, W., Li, H., Liu, M., Xiao, Y., Gao, H., Guo, L., Xie, J., Wang, G., Jiang, R., Gao, Z., Jin, Q., Wang, J., Cao, B., 2020. Clinical features of patients infected with 2019 novel coronavirus in Wuhan, China. *Lancet* 395 (10223), 497–506.
- Hui, E.C., Chan, E.W., Yu, K., 2015. The effect of LEED certification on Shanghai's prime office rental value. *J. Facil. Manag.* 13 (3), 297–310.
- IANS, 2020. Coronavirus impact: the impact of COVID-19 on the hospitality sector. Retrieved April 22, 2020 from (<https://timesofindia.indiatimes.com/business/india-business/the-impact-of-covid-19-on-the-hospitality-sector/articleshow/75290137.cms>).
- Iñedo, P., 2006. Extending the Gable et al. enterprise systems success measurement model: a preliminary study. *J. Inf. Technol. Manag.* 17 (1), 14–33.
- IIDA, 2018. About IIDA. Vision and Mission. Retrieved April 5th, 2010 from (www.iida.org/content.cfm/vision-mission).
- Jablonska, J., Trocka-Leszczynska, E., 2020. Ergonomics of sound in a hotel environment. In: Charytonowicz, J., Falcão, C. (Eds.), *Advances in Human Factors in Architecture, Sustainable Urban Planning and Infrastructure*. Springer International Publishing, Cham, pp. 57–65.
- Jacobs, D.E., Breyse, J., Dixon, S.L., Aceti, S., Kaweck, C., James, M., Wilson, J., 2014. Health and housing outcomes from green renovation of low-income housing in Washington, DC. In: *Journal of Environmental Health*, 76, pp. 8–16.
- Jahncke, H., 2012. Open-plan office noise: the susceptibility and suitability of different cognitive tasks for work in the presence of irrelevant speech. *Noise Health* 14 (61), 315–320.
- Jung, H.S., Yoon, H.H., 2018. Understanding workplace bullying. *Int. J. Contemp. Hosp. Manag.* 30 (3), 1453–1471.
- Kaklauskas, A., Lepkova, N., Raslanas, S., Vetloviene, I., Milevicius, V., Sepliakov, J., 2021. COVID-19 and green housing: a review of relevant literature. *Energies* 14 (8), 2072.
- Kang, L., Li, Y., Hu, S., Chen, M., Yang, C., Yang, B.X., Wang, Y., Hu, J., Lai, J., Ma, X., Chen, J., Guan, L., Wang, G., Ma, H., Liu, Z., 2020. The mental health of medical workers in Wuhan, China dealing with the 2019 novel coronavirus. *The Lancet. Psychiatry* 7 (3), e14.
- Karatepe, O.M., 2012. Job resources, work engagement, and hotel employee outcomes: a time-lagged analysis. *Econ. Res. - Ekon. Istraživanja* 25 (3), 644–665.
- Katon, W., Sullivan, M.D., 1990. Depression and chronic medical illness. *J. Clin. Psychiatry* 51, 3–14.
- Kaushal, V., Srivastava, S., 2021. Hospitality and tourism industry amid COVID-19 pandemic: perspectives on challenges and learnings from India. *Int. J. Hosp. Manag.* 92, 102707.
- Khan, K.I., Niazi, A., Nasir, A., Hussain, M., Khan, M.I., 2021. The effect of COVID-19 on the hospitality industry: the implication for open innovation. *J. Open Innov.: Technol., Mark., Complex.* 7 (1), 30.
- Kim, J., de Dear, R., 2013. Workspace satisfaction: the privacy-communication trade-off in open-plan offices. *J. Environ. Psychol.* 36, 18–26.
- Kuziemko, J., 2015. LEED buildings outperform market peers according to research. USGBC, Wash., DC.
- Larsson, N., Mangone, G., Kujawski, W., Delcourt, H., Leighton, L., Berchtold, M., Foliente, G., Larsson, G., Issa, M., Hierlihy, B., Salat, S., Fadli, F., 2020. Pandemics and the built environment. *Tech. Report. iisBE, Ott.*
- Law, R., Wu, J., Liu, J., 2014. Progress in Chinese hotel research: a review of SSCI-listed journals. *Int. J. Hosp. Manag.* 42, 144–154.
- Leder, S., Newsham, G.R., Veitch, J.A., Mancini, S., Charles, K.E., 2016. Effects of office environment on employee satisfaction: a new analysis. *Build. Res. Inf.* 44 (1), 34–50.
- Lee, J.Y., Wargocki, P., Chan, Y.H., Chen, L., Tham, K.W., 2019. Indoor environmental quality, occupant satisfaction, and acute building-related health symptoms in green mark-certified compared with non-certified office buildings. *Indoor Air* 29 (1), 112–129.
- Lee, S., Jeong, M., 2012. Effects of e-servicescape on consumers' flow experiences. *J. Hosp. Tour. Technol.* 3 (1), 47–59.
- Lo, K.K., Hui, E.C.M., Zhang, K.V., 2014. The benefits of sustainable office buildings in people's republic of China (PRC): revelation of tenants and property managers. *J. Facil. Manag.* 12 (4), 337–352.
- MacNaughton, P., Satish, U., Laurent, J.G.C., Flanagan, S., Vallarino, J., Coull, B., Spengler, J.D., Allen, J.G., 2017. The impact of working in a green certified building on cognitive function and health. *Build. Environ.* 114, 178–186.
- Mann, S.E., 1996. Employee stress: an important cost in mergers. *Bus. Insur.* 30 (48), 24.
- Menadue, V., Soebarto, V., Williamson, T., 2013. The effect of internal environmental quality on occupant satisfaction in commercial office buildings. *HVACR Res.* 19 (8), 1051–1062.
- Monzani, L., Zurriaga, R., López, G.V.E., 2018. Anxiety and the severity of tension-type headache mediate the relation between headache presenteeism and workers' productivity. *PLoS One* 13 (7), e0201189.
- Netemeyer, R.G., Bearden, W.O., Sharma, S., 2003. *Scaling Procedures: Issues and Applications*. SAGE Publications Ltd, London, UK.
- Newsham, G.R., Birt, B.J., Arsenault, C., Thompson, A.J.L., Veitch, J.A., Mancini, S., Galasiu, A.D., Gover, B.N., Macdonald, I.A., Burns, G.J., 2013. Do 'green' buildings have better indoor environments? New evidence. *Build. Res. Inf.* 41 (4), 415–434.
- Nieuwenhuis, M., Knight, C., Postmes, T., Haslam, S.A., 2014. The relative benefits of green versus lean office space: three field experiments. *J. Exp. Psychol.: Appl.* 20 (3), 199–214.
- Ostner, S.W., 2021. Biophilia hypothesis 'the benefits of nature in the workplace'. In: Meulenbroek, R.A., Danivska, V. (Eds.), *A Handbook of Theories on Designing Alignment between People and the Office Environment*. Routledge, London, UK, pp. 169–180.
- Parks, J., Svendsen, D., Singer, P., Foti, M.E., 2006. Morbidity and Mortality in People with Serious Mental Illness. National Association of State Mental Health Program Directors. Retrieved November 23rd, 2007 from (http://www.nasmhpd.org/general_files/publications/med_directors_pubs/Technical%20Report%20on%20Morbidity%20and%20Mortality%20-%20Final%2011-06.pdf).
- Pereira, M.J., Coombes, B.K., Comans, T.A., Johnston, V., 2015. The impact of onsite workplace health-enhancing physical activity interventions on worker productivity: a systematic review. *Occup. Environ. Med.* 72 (6), 401–412.
- Pieper, C., Schröer, S., Eilerts, A.-L., 2019. Evidence of workplace interventions—a systematic review of systematic reviews. *Int. J. Environ. Res. Public Health* 16 (19), 3553.

- Pietilä, M., Neuvonen, M., Borodulin, K., Korpela, K., Sievänen, T., Tyrväinen, L., 2015. Relationships between exposure to urban green spaces, physical activity and self-rated health. *J. Outdoor Recreat. Tour.* 10, 44–54.
- Pinheiro, M.D., Luís, N.C., 2020. COVID-19 could leverage a sustainable built environment. *Sustainability* 12 (14), 5863.
- Raanaas, R.K., Evensen, K.H., Rich, D., Sjøstrøm, G., Patil, G., 2011. Benefits of indoor plants on attention capacity in an office setting. *J. Environ. Psychol.* 31 (1), 99–105.
- Ram, Y., 2018. Hostility or hospitality? A review on violence, bullying and sexual harassment in the tourism and hospitality industry. *Curr. Issues Tour.* 21 (7), 760–774.
- Rivera, M.A., 2020. Hitting the reset button for hospitality research in times of crisis: covid 19 and beyond. *Int. J. Hosp. Manag.* 87, 102528.
- Roskam, I., Aguiar, J., Akgun, E., Arikian, G., Artavia, M., Avalos, H., Aunola, K., Bader, M., Bahati, C., Barham, E.J., Besson, E., Beyers, W., Boujut, E., Brianda, M.E., Brytek-Matera, A., Carbonneau, N., César, F., Chen, B.-B., Dorard, G., dos Santos Elias, L.C., Dunsmuir, S., Egorova, N., Favez, N., Fontaine, A.-M., Foran, H., Fricke, J., Furutani, K., Gallée, L., Gannagé, M., Gaspar, M., Godbout, L., Goldenberg, A., Gross, J.J., Gurza, M.A., Hall, R., Hashmi, M.A., Hatta, O., Helmy, M., Hoang, T.V., Huynh, M.T., Kaneza, E., Kawamoto, T., Knezevic, G., Kpassagou, B.L., Lazarevic, L.B., Le Vigouroux, S., Lebert-Charron, A., Leme, V., Lin, G.-X., MacCann, C., Manrique-Millones, D., Matias, M., Miranda-Orrego, M.I., Miscioscia, M., Morgades-Bamba, C., Mousavi, S.F., Moutassem-Mimouni, B., Muntean, A., Murphy, H., Ndayizigiye, A., Tenkue, J.N., Olderbak, S., Ornawka, S., Osman, F., Oyarce-Cadiz, D., Pérez-Díaz, P.A., Petrides, K.V., Pineda-Marin, C., Prandstetter, K., Prikhidko, A., Ricci, R.T., Salinas-Quiroz, F., Sánchez-Rodríguez, R., Sarrionandia, A., Scola, C., Sezibera, V., Silva, P., Simonelli, A., Soenens, B., Sorbring, E., Sorkkila, M., Schrooyen, C., Stănculescu, E., Starchenkova, E., Szczygiel, D., Tapia, J., Tri, T.M.T., Tremblay, M., Ustundag-Budak, A.M., Pacheco, M.V., van Bakel, H., Verhofstadt, L., Wendland, J., Yotanyamaneewong, S., Mikolajczak, M., 2021. Parental burnout around the globe: a 42-country study. *Affect. Sci.* 2 (1), 58–79.
- Roskams, M., Haynes, B., 2020. Salutogenic workplace design. *Journal of Corporate Real Estate*, 22 (2), 139–153.
- Ruiz, D.M., Castro, C.B., Díaz, I.M.R., 2012. Creating customer value through service experiences: an empirical study in the hotel industry. *Tour. Hosp. Manag.* 18 (1), 37–53.
- Saah, F.I., Amu, H., Kissah-Korsah, K., 2021. Prevalence and predictors of work-related depression, anxiety, and stress among waiters: a cross-sectional study in upscale restaurants. *PLoS One* 16 (4), e0249597.
- Samet, J.M., Spengler, J.D., 2003. Indoor environments and health: moving into the 21st century. *Am. J. Public Health* 93 (9), 1489–1493.
- Schiavon, S., Altomonte, S., 2014. Influence of factors unrelated to environmental quality on occupant satisfaction in LEED and non-LEED certified buildings. *Build. Environ.* 77, 148–159.
- Sederer, L.L., Silver, L., McVeigh, K.H., Levy, J., 2006. Integrating care for medical and mental illnesses. *Prev. Chronic Dis.* 3 (2), A33.
- Sekaran, U., 2003. *Research Methods for Business a Skill Building Approach*. Wiley and Sons, New York, NY.
- Seppänen, O., Fisk, W., Mendell, M.J., 2002. Ventilation rates and health. *ASHRAE J.* 44 (8), 56–58.
- Serafeim, G., Rischbieth, A.M., Koh, H.K., 2020. Sustainability, business, and health. *JAMA* 324 (2), 147–148.
- Shani, A., Pizam, A., 2009. Work-related depression among hotel employees. *Cornell Hosp. Q.* 50 (4), 446–459.
- Shantanu, S., Kearsley, S., 2020. How should clinicians integrate mental health into epidemic responses? *AMA J. Ethics* 22 (1), E10–E15.
- Shen, Z., Yang, X., Liu, C., Li, J., 2021. Assessment of indoor environmental quality in budget hotels using text-mining method: case study of top five brands in China. *Sustainability* 13 (8), 4490.
- Shigemura, J., Ursano, R.J., Morganstein, J.C., Kurosawa, M., Benedek, D.M., 2020. Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: mental health consequences and target populations. *Psychiatry Clin. Neurosci.* 74 (4), 281–282.
- Simpeh, K., Simpeh, M., Nasiru, I., Tawiah, K., 2011. Servicescape and customer patronage of three star hotels in Ghana's metropolitan city of Accra. *Eur. J. Bus. Manag.* 3 (4), 119–131.
- Sinclair, R.R., Probst, T.M., Watson, G.P., Bazzoli, A., 2021. Caught between scylla and charybdis: how economic stressors and occupational risk factors influence workers' occupational health reactions to COVID-19. *Appl. Psychol.* 70 (1), 85–119.
- Smith, A., Pitt, M., 2009. Healthy workplaces: plantscaping for indoor environmental quality. *Facilities* 29 (3/4), 169–187.
- Sönmez, S., Apostolopoulos, Y., Lemke, M.K., Hsieh, Y.C., 2020. Understanding the effects of COVID-19 on the health and safety of immigrant hospitality workers in the United States. *Tour. Manag. Perspect.* 35, 100717.
- Spence, J.T., Helmreich, R.L., Pred, R.S., 1987. Impatience versus achievement strivings in the Type A pattern: differential effects on students' health and academic achievement. *J. Appl. Psychol.* 72 (4), 522–528.
- Street, T.D., Lacey, S.J., 2019. Accounting for employee health: the productivity cost of leading health risks. *Health Promot. J. Aust.* 30 (2), 228–237.
- Suh, M., Moon, H., Han, H., Ham, S., 2015. Invisible and intangible, but undeniable: role of ambient conditions in building hotel guests' loyalty. *J. Hosp. Mark. Manag.* 24 (7), 727–753.
- Teng, Y.M., Wu, K.S., Lin, K.L., Xu, D., 2020. Mental health impact of COVID-19 on quarantine hotel employees in China. *Risk Manag. Healthc. Policy* 13, 2743–2751.
- Tennant, R., Hiller, L., Fishwick, R., Platt, S., Joseph, S., Weich, S., Parkinson, J., Secker, J., Stewart-Brown, S., 2007. The Warwick-Edinburgh mental well-being scale (WEMWBS): development and UK validation. *Health Qual. Life Outcomes* 5 (1), 63.
- Thatcher, A., Milner, K., 2012. The impact of a 'green' building on employees' physical and psychological wellbeing. *Work* 41, 3816–3823.
- Thayer, J.F., Verkuil, B., Brosschot, J.F., Kevin, K., West, A., Sterling, C., Christie, I.C., Abernethy, D.R., Sollers, J.J., Cizza, G., Marques, A.H., Sternberg, E.M., 2010. Effects of the physical work environment on physiological measures of stress. *Eur. J. Cardiovasc. Prev. Rehabil.* 17 (4), 431–439.
- Torales, J., O'Higgins, M., Castaldelli-Maia, J.M., Ventriglio, A., 2020. The outbreak of COVID-19 coronavirus and its impact on global mental health. *Int. J. Soc. Psychiatry* 66 (4), 317–320.
- Tu, Y., Li, D., Wang, H.J., 2021. COVID-19-induced layoff, survivors' COVID-19-related stress and performance in hospitality industry: the moderating role of social support. *Int. J. Hosp. Manag.* 95, 102912.
- UNWTO, 2020. **Tourism and Covid-19**. Retrieved June 10th, 2020 from (<https://www.unwto.org/news/covid-19-unwto-c-alls-on-tourism-to-be-part-of-recovery-plans>).
- Venema, T., Gestel, L.V., 2021. Nudging in the workplace facilitating desirable behaviour by changing the environment. In: Meulenbroek, R.A., Danivska, V. (Eds.), *A Handbook of Theories on Designing Alignment between People and the Office Environment*. Routledge, London, UK, pp. 222–235.
- Villanueva, D., Djurkovic, N., 2009. Occupational stress and intention to leave among employees in small and medium enterprises. *Int. J. Stress Manag.* 16 (2), 124–137.
- Wahl, D., 2016. *Designing a Regenerative Culture*. Triarchy Press, Bridport, UK.
- Weschler, C.J., 2009. Changes in indoor pollutants since the 1950s. *Atmos. Environ.* 43 (1), 153–169.
- Wong, A.K.F., Kim, S., Kim, J., Han, H., 2021. How the COVID-19 pandemic affected hotel employee stress: employee perceptions of occupational stressors and their consequences. *Int. J. Hosp. Manag.* 93, 102798.
- Yang, C.L., Lin, S.P., Chan, Y.H., Sheu, C., 2010. Mediated effect of environmental management on manufacturing competitiveness: an empirical study. *Int. J. Prod. Econ.* 123 (1), 210–220.
- Yang, L.Q., Che, H., Spector, P.E., 2008. Job stress and well-being: an examination from the view of person-environment fit. *J. Occup. Organ. Psychol.* 81 (3), 567–587.
- Yu, J., Ariza-Montes, A., Hernández-Perlines, F., Vega-Muñoz, A., Han, H., 2020. Hotels' eco-friendly physical environment as nature-based solutions for decreasing burnout and increasing job satisfaction and performance. *Int. J. Environ. Res. Public Health* 17 (17), 6357.
- Yu, J., Park, J., Hyun, S.S., 2021. Impacts of the COVID-19 pandemic on employees' work stress, well-being, mental health, organizational citizenship behavior, and employee-customer identification. *J. Hosp. Market. Manag.* 30 (5), 529–548.
- Yudelson, J., 2008. *The Green Building Revolution*. Island Press, Washington, DC.
- Zeigler, P.M., 2012. *What is a Green Building? And Fundamental Principles of Green Building and Sustainable Site Design*. Governor's Green Government Council (GGC), Pennsylvania.
- Zhang, J., Xie, C., Wang, J., Morrison, A.M., Coca-Stefaniak, J.A., 2020. Responding to a major global crisis: the effects of hotel safety leadership on employee safety behavior during COVID-19. *Int. J. Contemp. Hosp. Manag.* 32 (11), 3365–3389.