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PREFERENTIAL SEATING ARRANGEMENT AT CO-WORKING SPACES: A STUDY CONDUCTED AT AWFIS

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ABSTRACT

Recent times have provided opportunities for employees, worker, users to create an ideal work environment that has a progressive platform for growth. A particular seating arrangement conveys importance and has either a positive or a negative impact on ones' work and relates to factors like stress and concentration due to the layout, spatial arrangement, design and other facilities available. The paper analyses different seating arrangements at co-working spaces and its impact on users' productivity and whether there are constraints influencing the productivity from a dataset collected post covid-19. A co-working space provides an arrangement where diverse worker work at a common space to benefit from the facilities enabling the users to enhance their potential skills and knowledge leading to greater productivity. There are challenges associated with meeting a certain seating arrangement especially post pandemic given the productivity constraints. The study also highlights whether there is a significant difference in the seating preferences of users post covid-19 at co-working spaces with diverse set of job roles. The new normal has forced users to shift and have flexible workspace and this has triggered the seating arrangement influenced by various constraints like physical movements, air quality, natural lighting and greenery. An extensive literature review has been done and found that preferential seating arrangement has not been heavily used and investigated. For the data collection, a questionnaire was prepared and sent across to users with diverse job roles along with an interview conducted with a community associate at co-working spaces. A descriptive and analytical research methodology will be used for the research study. The statistical tools using ANOVA and regression will be applied. The findings and research implications drawn from this research will help in understanding various seating preferences of users and its impact on their productivity which will impact the overall organisations' success.

Keywords: *Co-Working, Seating Arrangement, User Productivity, Productivity Constraints.*

Introduction

There has always been an interplay between people and their environment which leads to behavioural conduct that is usually territorial in nature. As humans, we intend to maintain order and are concerned with one's own protection. In the field of psychology, people are coherent to an environment that has various elements such as the temperature and air freshness, level of noise, spatial layout, distribution of light, and the greenery around them. Similarly, a workplace environment is becoming more flexible allowing people to work in a comfortable work environment in relation to productivity.

Previous studies have indicated the importance of various factors in a workspace and their impact on users' creativity and productivity. A *Co-working space* in such a manner gives an arrangement to the users to use a flexible seating arrangement based on their preference, leading to greater productivity and efficiency. Thus, there is a need to focus on designing the interiors as a study shows that there is a strong interrelation between the biophilic designs and the users (Sharma & Reddy, 2022)[1].

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1 Sharma, N., & Reddy, D. B. A. K. (2022). Enriching Co-Working Spaces with Biophilic Design: Its Impact in Enhancing User Preference. Inspira- Journal of Modern Management & Entrepreneurship (JMME), 12(01), 51–60.

Productivity is a state of doing something worthwhile and establishes a clear relation between the inputs and the output of the results (van der Voordt, 2004)[1]. The inputs here are the resources that are used to generate an expected outcome that is usually measured. Productivity is linked to the spatial layout, facilities, and resources available. A seating arrangement in a workspace impacts users' results in a positive or a negative manner. Recent times have had major changes as people are looking for a flexible workspace with seating arrangements that cater to their needs. Such arrangements can lead to enriching users with greater skills and potentially increase their efficiency. Such spaces are also associated with distractions and other constraints as it is a shared space accommodating a diverse set of users with a diverse job role. Thus, it is important to understand the various seating arrangements and the concept of seat preferences which enables the users to choose to work whenever they feel the most productive (Rahaman M S., et al, 2020)[2].

The covid-19 pandemic created an unprecedented dilemma among a different set of employees and has built up a concern about seating arrangements at the workplace. Co-working spaces are thriving to provide a flexible work environment keeping the current scenario in mind and helping users achieve their distinct goals. These spaces have reimagined the way you work and align all kinds of needs of the users, prioritizing health, and safety. It is very crucial in noting the implications of the seating arrangement in a workspace as they bring in an effect on users' productivity, and creativity dependent on factors such as stress and concentration.

This study aims at analyzing the impact of seating preferences on users' productivity and examines a diverse set of seating preferences for any constraints on users' productivity by looking into elements of lighting, temperature, level of noise, physical movements, humidity level, view from the window, and greenery around the seating area.

Rahaman M S., et al (2020)[3], in accordance with this paper, conducted an analysis of various seating preferences of 37 workers and made a list of implications to draw findings based on a dataset collected pre-covid-19 pandemic. The study focuses on a hybrid workplace environment and suggests that an arrangement that is not well controlled can have a negative impact on productivity and thus, it is the perfection of such arrangements dependent majorly on lighting and other aspects that makes the workspace design a success.

Therefore, this paper is set to analyze the various seating preferences of users in a co-working space and to examine such a diverse set of seating arrangements to make an analysis of its impact on users' productivity. Furthermore, this paper also aims at analyzing the list of constraints influencing users' productivity and also to determine whether there has been a change in such seating preferences post pandemic among users from a diverse set of job roles from a dataset collected post covid-19 pandemic.

Literature Review

Theo J. M. (2004)[4] The paper focuses on the flexible workplaces and new offices and their impact on employees' productivity and satisfaction with a suggestion to conduct empirical research in the future. **Arunesh C, Pankaj C, Surinder D, et al., (2009)[5]** reviews the ergonomics in the office environment and aim at aspects such as lighting, workstation design, additional furniture, and office layout that could be better developed based on ergonomics principles and knowledge. **Salvador B, Gonzalo R B, Dolores G (2018)[6]** This paper develops a research model to observe the relationship between co-working spaces and productivity by indicating the various facilities that could be offered by a co-working space that acts as a major motivational tool for an individual. **Odilia M and Nabila A (2018)[7],** the result of this study highlights how co-working spaces accommodate various complex needs of the users by properly examining the various seating preferences, ambience, and the

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1 Van der Voordt, T. J. (2004). Productivity and employee satisfaction in flexible workplaces. *Journal of Corporate Real Estate*, *6*(2), 133–148. https://doi.org/10.1108/14630010410812306

2 Saiedur Rahaman, M., Kudo, S., Rawling, T., Ren, Y., and Salimet, F. (2020), Seating preference analysis for hybrid workplaces, Institute of Electrical and Electronics Engineers Inc., 978-1-4503-XXXX-X/18/06., 4.

3 Saiedur Rahaman, M., Kudo, S., Rawling, T., Ren, Y., and Salimet, F. (2020), Seating preference analysis for hybrid workplaces, Institute of Electrical and Electronics Engineers Inc., 978-1-4503-XXXX-X/18/06., 4.

4 Van der Voordt, T. (2004). Productivity and employee satisfaction in flexible workplaces. Journal Of Corporate Real Estate, 6(2), 133-148. doi: 10.1108/14630010410812306

5 Chandra, A., Chandna, P., Deswal, S., & Kumar, R. (2009), Ergonomics in the Office Environment: A Review, Proceedings Of International Conference On Energy And Environment

6 Bueno, S., Rodríguez-Baltanás, G., & Gallego, M. (2018). Coworking spaces: a new way of achieving productivity. *Journal Of Facilities Management*, *16*(4), 452-466. doi: 10.1108/jfm-01-2018-0006

7 Renaningtyas Manifesty, O., & Afif, N. (2018), From Angkringan to Coworking Space: The Emergence of New Social Spaces for Young People, Proceeding 4th ICIAP: Design and Planning in Disruptive Era

atmosphere and derive at any changes in the spatial layouts, thus, viewing such spaces as a new social space for young people. **Sonthya V (2018)[1]** studies the users' perspectives, behaviours, and characteristics while using co-working spaces by conducting a quantitative methodology from the questionnaire collected, and thus, the findings of this study determine all the three factors of the users and further specifies to consider other factors. **Helena J, Staffan H, Niklas H, et al., (2011)[2]** This study was based on experimental research to examine the cognitive, emotional, and physiological effects of noise conditions in two open-plan offices. The document constructed 4 hypotheses for the study, indicating that the design of the work environment influences the well-being and performance of workers. **Srinarayana N, Arunchandar V, Venkatesh S, et al., (2018)[3]** the paper uses a thermal model and physics-based approach to examine the actuators assigned to desks to determine the comfort of the users' seating and the temperature span.

Raymond J C, Audrey B, Amy O (2012)[4], the article illustrates the shift of individuals from an office-based layout to a group context, it aims to clarify how different knowledge workers make a distinction between themselves and a shared environment. The paper concentrates on models of work environment, social comforts, and balance in temperature and subsequently comprehends the new and arising spatial and the engagement of the occupants and analyzes changing ideas of the work environment. **Mohammad R, Shaw K, Tim R, et al., (2020)[5]** analyses the various seating preferences of different demographics from a dataset collected pre covid-19, indicating the future research of developing combinatorial optimization solutions and further investigating the seating preferences by focusing on employees' stress, concentration, and productivity. **Mak CM and Lui YP (2011)[6]** In this paper, the emphasis is fundamentally on inspecting the impact of sound on efficiency and deciding the connection between the progressions in efficiency and different factors like lighting, plan, temperature, design, and so forth. To continue with the examination, a pilot study was led preceding the fundamental review, surveys were created welcoming workplaces in Hong Kong to take part. They found that out of the variables, sound and temperature were huge in affecting efficiency and it was likewise figured out that there were areas of strength between the progressions in efficiency and any remaining elements of lighting, plan, office design, and so on.

Statement of the Problem

The essential shift from working from the office to telecommuting during covid-19 caused the organizations to adjust to another model to facilitate the progress. The pandemic has made it a test to re-examine the work environment and work on a more adaptable workspace which prompted making a 'third space' called co-working spaces. This study evaluates the various unique seating arrangements of users post covid-19 with an emphasis on individual wellbeing and productivity.

The main aim of this study is to analyze the impact of various seating arrangements on the users' productivity in co-working spaces and to examine the constraints influencing their productivity. The study also investigates any change in the seating preferences among a diverse set of users post covid-19 pandemic.

Objectives

- To analyze the impact of seating arrangement on productivity.
- To examine the diverse set of seating preferences and constraints influencing users' productivity.
- To analyze the change in seating arrangement at co-working spaces post covid-19.

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Methods of Data Sourcing

For the purpose of this study, primary and secondary data are collected through a structured questionnaire and sent across to users with a diverse set of job roles. Furthermore, an interview was conducted at a co-working space. Data from journals, articles, and websites were used as a secondary source of data.

Sampling

A sample size of 112 is considered for the data collection from the respondents having a diverse set of job roles of a freelancer, startups, IT professionals, marketing sectors, etc. from a co-working space.

Research Hypotheses

H_1: There is a significant impact of seating arrangement on users' productivity.
H_2: There are constraints influencing users' productivity in co-working spaces.
H_3: There is an impact of change in seating arrangements post pandemic.

Research Limitations

The study is restricted to the respondents of one co-working space and further only focuses on the various seating arrangements in a co-working space and examines the constraints in such spaces such as the level of noise, physical movements, temperature, lighting, fragrance, the colour of the wall, and the presence of greenery.

Analysis and Results

User Demographics

Table 1: Table Showing Age of Respondents

Age Group (in Years)	No. of Respondents	Percentage of Respondents (%)
18-24	32	28.6
25-30	44	39.3
31-35	21	18.8
36-40	8	7.1
Above 40	7	6.3
Total	112	100.0

(Primary Source)

Table 2: Table Showing No. of Years of Respondents in Co-working Space

Years at Co-working Space	No. of Respondents	Percentage of Respondents (%)
0-3 years	74	66.1
4-6 years	34	30.4
7-10 years	4	3.6
Total	112	100.0

(Primary Source)

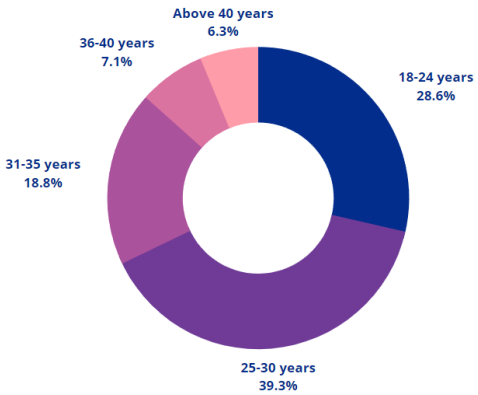

Fig 1(a): Age Distribution

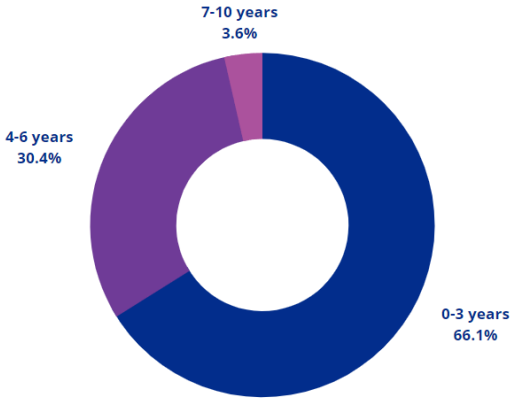

Fig 1(b): Length of usage at co-working spaces

Fig 1(a) and (b): Users' Statistical Interpretation

The user respondents from the dataset collected are from diverse job roles from freelancers, start-ups, IT professionals, human resources, corporate employees, and others having the male and female proportions of 50.5% and 49.5%, respectively. From figure 1(a), the majority of the users are from an age group of 25-30 years consisting of 39.3% of the respondents. Figure 1(b) also shows the length of the usage whereby, the figure illustrates that 66.1% of users are using a co-working space from 0-3 years while 3.6% of users have been using co-working spaces from 7-10 years.

Analysis of Seating Arrangements and their Impact on Users' Productivity

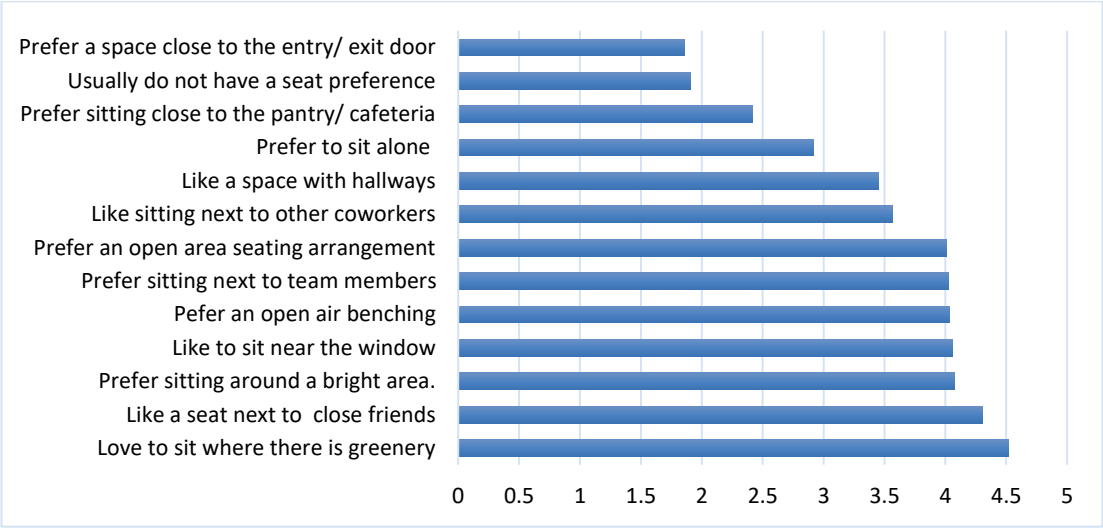

Fig 2: List of Unique Seating Preferences

A list of statements in form of a questionnaire was prepared and circulated to various users and it was found that the majority of the users loved to sit where there was greenery and preferred a seat next to their close friends or in a bright area. From fig 2, it is seen that users prefer an open area seating arrangement. Accordingly, it is also noted that as much as users prefer a seat next to their co-workers, they 'sometimes' prefer a seat alone. From fig 2, illustrations can be drawn as fewer users prefer a space next to the entry or exit doors, and the majority of the users 'disagree' stating they usually have a seat preference. The areas that are close to the cafeteria and other breakout regions are said to facilitate the users for better collaboration, and a focus on their wellbeing and health, which fosters better productivity (Boge et al., 2019)[1].

[1] Boge, K., Temeljorov Salaj, A., Bakken, I., Granli, M., & Mandrup, S. (2019). Knowledge workers deserve differentiated offices and workplace facilities. Facilities, 37(1/2), 38–60. https://doi.org/10.1108/f-01-2018-0002

H_1: There is a significant impact of seating arrangement on users' productivity.

The hypothesis is analyzed and tested with the help of regression estimation and ANOVA.

Table 3(a): Model Summary

R	R square	Adjusted R Square	Std. Error of the Estimate
.570[a]	.325	.319	.58262

a. Predictors: (Constant), seating_arrangements (Primary Source)

Table 3(b): ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	17.968	1	17.968	52.933	<.001[b]
Residual	37.338	110	.339		
Total	55.306	111			

a. Dependent Variable: user_productivity

b. Predictors: (Constant), seating_arrangements (Primary Source)

Table 3(c): Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
(Constant)	1.322	.421		3.144	.002
Seating arrangements	.842	.116	.570	7.275	<.001

a. Dependent Variable: user_productivity (Primary Source)

There are numerous factors that influence users' productivity and the same was analyzed by looking into the aspects that impact their productivity. To test the hypothesis for a significant impact of seating arrangement on users' productivity, a regression analysis is done. Using a linear regression tool, it was analyzed that there is a positive relationship between the seating arrangements and productivity. The percentage of variance in productivity is explained by the seating arrangements signifying that as the independent variable increases the mean of the dependent variable also tends to increase. The change in the percentage of 31.9% is because of the impact of the independent variable (seating arrangements) on the dependent variable (user productivity) and can be inferred from table 3(a).

Table 3(b) indicates the statistical significance of the regression model, here $p<0.001$ which is less than 0.05 indicates to reject the null hypothesis, accepting the alternate which says that there is a significant impact of seating arrangements on productivity.

It can be inferred from table 3(c), that the regression equation $Y=a + bX$ represents the user productivity of 1.322 + 0.842 indicating that as the X variable (seating arrangements) increases by 1 the value of the Y variable (user productivity) increases by 0.842.

H_2: There are constraints influencing users' productivity in co-working spaces.

The hypothesis is analyzed and tested with the help of regression estimation and ANOVA.

Table 4(a): Model Summary

R	R square	Adjusted R Square	Std. Error of the Estimate
.675[a]	.456	.451	.52318

a. Predictors: (Constant), productivity_constraints (Primary Source)

Table 4(b): ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	25.197	1	25.197	92.054	<.001[b]
Residual	30.109	110	.274		
Total	55.306	111			

a. Dependent Variable: user_productivity

b. Predictors: (Constant), productivity_constraints (Primary Source)

Table 4(c): Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
(Constant)	1.397	.312		4.472	<.001
Seating preferences	.758	.079	.675	9.594	<.001

a. Dependent Variable: user_productivity (Primary Source)

Table 4(a) indicates that there is a positive correlation between productivity and the various constraints. From table 4(b) it can be inferred that the significance value (sig<0.05) is less than 0.05 and therefore the null hypothesis is rejected and accepts the alternate hypothesis. Thus, from this study, the users have constraints that influence their productivity at work.

It can be inferred from table 4(c), that by using Y=a + bX, whereby a= 1.397 Y= user productivity, X = productivity constraints. Using the regression analysis, 1.397 + 0.758 indicates that as the X variable increases by 1 the value of the Y variable increases by 0.758.

H_3: There is an impact of change in seating arrangements post pandemic.

The hypothesis is analyzed and tested with the help of regression estimation and ANOVA.

Table 5(a): Model Summary

R	R square	Adjusted R Square	Std. Error of the Estimate
.399[a]	.159	.152	.43598

a. Predictors: (Constant), seating_preferences (Primary Source)

Table 5(b): ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	3.959	1	3.959	20.826	<.001[b]
Residual	20.909	110	.190		
Total	24.867	111			

a. Dependent Variable: seating_post_pandemic

b. Predictors: (Constant), seating_preferences (Primary Source)

Table 5(c): Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients Beta	t	Sig.
	B	Std. Error			
(Constant)	2.287	.315		7.266	<.001
Seating preferences	.395	.087	.399	4.564	<.001

a. Dependent Variable: seating_post_pandemic (Primary Source)

Table 5(a) highlights the R and R^2 values and the correlation of 0.399 indicating a moderate degree of correlation. The R square column depicts how much of the total variation in the dependent variable is explained by the independent variable, and in this case the coefficient of determination, 15.9% can be explained which is very less, and therefore, it is found that there has been a less impact of change in seating arrangements post covid-19 pandemic. The impact of 15.2% is found on the dependent variable caused by the independent variable. From table 5(c), it is inferred that by using Y=a + bX, whereby a= 2.287 Y= seating preferences post covid pandemic, X = seating arrangements. There are multiple factors that are not addressed that have significant importance in planning and designing workplaces which has fluctuated under the current condition to fulfil individual needs.

Conclusion

The study discusses the various seating arrangements in a co-working space and the impact on users' productivity from a dataset collected post covid-19 pandemic. Findings reveal that the majority of the users preferred sitting in the presence of greenery and preferred sitting beside their close friends, sitting in a bright area with blue, green, or white colours, and it was also found that a majority of them disagreed on not having a seat preference. It has been revealed that the spatial layout makes a clear connection between users' creativity and productivity (O.R Manifesty and N. Afif, 2018)[1]. The landscape and the layout play a vital part in accommodating young creative minds for a space to increase their knowledge and grow their potential (Wilderness Agency, 2018)[2].

From a previous study, (A. Chandra et al., 2009)[3] show that there are distractions and discomforts caused by noise, glares, and physical movements that can lead to annoyance and influence productivity. It is also seen that proper distribution of lighting should meet several requirements and

[1] Renaningtyas Manifesty, O., & Afif, N. (2018), From Angkringan to Coworking Space: The Emergence of New Social Spaces for Young People, Proceeding 4th ICIAP: Design and Planning in Disruptive Era.

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unsuitable lighting can cause difficulty in focusing and cause stress on the eyes. There is a strong preference for daylight in the workplace, particularly linked to the belief that daylight promotes better health (Galasiu & Veitch, 2006)[1].

The paper highlights the various seating preferences of users and their impact on users' productivity and the findings are in line with the same. Further, the paper emphasizes various productivity constraints and the results state that there are constraints influencing users' productivity. The study makes an analysis that although the users have stated that there has been a change in their seating preferences, they disagreed to sit in isolation post pandemic and preferred a seat next to the window for natural light and ventilation. The outcome of this study confirms that the impact of change in users' seating arrangement post covid-19 pandemic is considerably less stating that users still prefer an open area arrangement.

Research Implications, Limitations, and Scope for Further Research

The implications of the paper aims at the co-working hosts, facility manager, and others responsible for office designs and configuration and must consider the users' requirements while specifying various types of seating arrangements and this will help provide insights to the hosts and the interior designers to emphasize certain aspects according to users' preferences at co-working space. By analyzing the various seating preferences of users from a different set of job roles at a co-working space, it is realized that a particular kind of layout is preferred by users when they are able to accommodate their set of requirements. It is seen that users prefer an open area arrangement and their preference for such open spaces has increased. Although, a previous study shows that high-level users are more negative about open area arrangements and this underlines that a complex task requires more harmony and security when at work (van der Voordt, 2004)[2].

The unprecedented dilemma due to the current situation has made to rethink the traditional office layout and due to covid-19 and the restrictions that came along, companies were forced to revive their policies and strategies. The companies who are completely trying and desiring to go fully remote are a little concerned about their employees' satisfaction and productivity and co-working spaces may just be the right choice. The study is limited to users of one co-working space and thus, it cannot be generalized. Further, the study restricts to constraints such as noise level, lighting, physical movements, temperature, and the view from the window.

A further study can be evaluated by considering other aspects of users' seating preferences and focus on various other constraints relating to privacy that can be analyzed which could have an impact on users' productivity. Future research should also consider other aspects of users' constraints at work and focus on their attitude, motivation, and behaviour in choosing a particular seating arrangement. The research implications drawn from this study will help in showcasing how a co-working place can act as a medium to mentor, attract talent and co-create by engaging the users while considering various factors that could act as a constraint and the impact of preferential seating arrangement that fuel productivity.

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