

workspace

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THE PREFERENCE OF MILLENNIALS IN SURABAYA TOWARDS WORKSPACE CHARACTERISTICS

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ABSTRACT: Millennial generation grows in the advance of information technology and has started dominating the productive age in Surabaya City. Their capability in operating technology makes work activities much more efficient. Therefore, the need for concentration in workspaces could be reduced. Many studies have been done to understand millennial's workspace. However, previous research is only limited to one workspace. Therefore, this research is conducted to find the millennial's preferences in the type of workspace character by spreading questionnaire. The results are then tested by ANOVA and Kendall's concordance test. The result of this study shows that workspace which character is to optimize concentration is less demanded by millennials. On the other hand, millennials are comfortable with workspace which characteristic is to bring through collaboration with the other workers, such as team space. However, based on millennial's demography analysis, there are differences in preferences. Younger millennials need more concentration than older millennials

Keywords: millennial's demography, workspace, type of space preferences, concentration, collaboration

INTRODUCTION

The millennials of today are those of age 20 to 40 (Codrington, 2008; Eddy & Johnson, 2015), which means millennials are in the productive age. (Badan Pusat Statistik, 2016). The millennial generation is a unique one, as they grew up in the bloom of information technology (Codrington, 2008). The advanced technology of today enables us to work efficiently and quickly (Grant, 2019). Furthermore, it also enables millennials to stay connected to each other wherever and whenever, so they have a degree of freedom in their lifestyle, including at work (Thompson & Gregory, 2012; Perdana, 2019; Haeger & Lingham, 2014). Therefore, millennials are uncomfortable with a formal work environment and prioritize concentration (Alton, 2017; Kemperman & Appel-Meulenbroek, 2019; Hobbs, 2017).

Rented offices that are available in Surabaya these days tend to be designed to optimize employee's concentration. These types of workspaces are planned to increase employee's focus in the hope to hasten work and increase productivity. This contributes to the fact that the general public in Surabaya is not interested in rented offices (Colliers International, 2018). Morrison & Smollan (2019) did a study on millennials' behaviour and their workspace for 14 months. The results showed that an open workspace can fulfill psychological and occupational needs. However, the previous study was only limited to one type of workspace, which was open plan, thus overlooking other types of workspaces.

This study aims to explore millennials' preferences of characteristics and type of workspace. The preference will be further analyzed by considering millennials' demography, which are gender, age, occupation, work position, and work experience. The characteristics and type of workspace will be divided into two types, which are concentration and collaboration.

Generation Theory & Millennials' Behavior

The generation theory states that the era in which a person is born affects his development of worldview. Generations are classified into 5 types, which are the GI Generation, Silent Generation, Baby Boomers, Generation X, dan Millennials (Codrington, 2008). Millennial is a generation who grew up in the era of communication technology. This generation can be said to have grown up too fast and are able to operate the existing technology, making them very informative. They are a generation that involves technology in every aspect of their lives (Kementrian Pemberdayaan Perempuan dan Perlindungan Anak, 2019), including in their social lives and work. With the internet, millennials are able to stay connected to each other wherever and whenever (Setiawan, 2018), making them very social. This affects their work. This generation expects a balance between work and life.

The demographic factor of millennials consists of age, work experience, field of work, and work position. Based on age, millennials fall under the category of young adults (McNeill & O'Donnell, 1985) and are differentiated into two groups, young millennials and old millennials (Levinson, 1986). Based on work experience, workers are differentiated into those who have worked for less than 3 years, and those who have worked for more than 3 years (Handoko, 2007). Based on the field of work, millennials are put into 3 groups, millennials who work in the field of creative arts & design, management, and technical (Direktorat Klasifikasi dan Pembakuan Statistik, 2014). Based on the work position, millennials are separated into two levels, which are workers and managers.

Workspace Technology and Characteristics

Technology affects the way people do their job, especially millennials. Technology can shorten the work process and ease the access to do the work thus increasing productivity. Furthermore, with technology, workers can do their work anywhere (Grant, 2019). The effects that technology brings to the work environment are speed, efficiency, aid coordination, flexibility, mobility, and difficulty to be away from work (Kroemer & Kroemer, 2017).

Space characteristic is an abstract quality that will affect the emotional and psychological responses of the user (Simmonds, 1961). Space characteristics classification is based on two factors, which are physical and level of interaction. This study focuses on space characteristics based on the level of interaction, so space characteristics are differentiated into concentration and collaboration. Concentration-type spaces prioritize users' focus on the task at hand, while collaboration-type spaces enable interactions among its users'. Understanding the effect of space characteristics on its users is where ergonomics theory comes to play (Snyder & Catanese, 1984).

Ergonomics is the application of science on human physiologic to optimize the comfort and work quality of humans (Sulianta, 2014). Ergonomics is affected by 6 (six) factors, namely air quality, spatial comfort, privacy, lighting, and noise (Vischer, 2005). In this study, the factors used are privacy, noise, and spatial comfort. Privacy is a variable that is related to seeing and

being seen, as well as hearing and being heard. Noise is a variable linked with sound, background noise, human voice, and tool sounds. Spatial comfort is linked to the size of the space, furniture, and allocation. Three aspects of comfort are used in analyzing the variable of ergonomics, which are physical comfort, functional comfort, and psychological comfort.

Interpersonal relationship is the relationship between two or more people (DeVito, 2007). Interpersonal relationship happens as there is an attraction in certain individuals that compels other individuals to approach them and establish a relationship. Interpersonal relationships can be classified based on the quality of the relationship and the subjects. Based on relationship quality, interpersonal relationship can be differentiated into positive relationship and negative relationship (Khazanchi, Sprinkle, Masterson, & Tong, 2014). Meanwhile, based on professional relationship subject, it can be differentiated into colleague-colleague relationship and manager-staff relationship.

The main goal of a workspace is to support its user to perform their tasks and activities (Meel, Martens, & Ree, 2010). Two main things in a workspace are the size of the space and how enclosed it is. From those two, 9 types of workspaces are derived, namely open office, team space, cubicle, private office, shared office, team room, study booth, work lounge, and touch down. Each workspace can give a varying level of privacy, acoustically and visually. Characteristics that arise from each variant can give a significant impact on performance and interaction between workers in each room.

Millennials' Preference for Workspace Characteristics

Preference is a concept used in social science that assumes the ranking of alternatives (Brehm, 1956). Workspace characteristics based on the level of interaction is split in two, which are workspace with concentration characteristic and workspace with collaboration characteristic (Simmonds, 1961). Ergonomics theory is used to understand the effects of workspace characteristics on humans (Snyder & Catanese, 1984). Variables of the ergonomics theory used in this study are privacy, noise, and spatial comfort (Vischer, 2005). Aside from the ergonomics theory, workspace preference is also affected by the interpersonal relationship that takes place in the type of workspace used (Juneja, n.d.).

In workspaces that prioritizes collaboration, a person's activity can be seen by others in the room, which creates an uncomfortable situation. However, Morrison & Smollan (2019) states that workspaces with a collaboration characteristic motivate individuals to perform their tasks better. Moreover, workspaces with a collaboration characteristic also enable the company seniors to be more reachable, so that the workflow is more efficient (Perdana, 2019). Workspaces with a collaboration characteristic are suitable for millennials, considering millennials are fond of freedom and socializing (Thompson & Gregory, 2012; Perdana, 2019). Furthermore, millennials also like a work environment where they are able to form a relationship (Alton, 2017).

H1: Millennials prefer workspaces with a collaboration characteristic

RESEARCH METHOD

This study is associative-quantitative, starting with a literature study to determine the variables along with their indicators. Based on those variables, a questionnaire is formed which is then

distributed to millennials in Surabaya, with the criteria of having at least had worked for a year. The work experience will give an insight to respondents to determine the characteristics and workspace of their choice. Incomplete and ineligible questionnaires are then eliminated. Then, data that fulfills the criteria are tested for its validity and reliability. Invalid and less reliable data is then eliminated. ANOVA test is used to understand the differences in criteria and workspace based on demographic factors. Meanwhile, to determine the ranking of millennial's choice on workspace type, the Kendall concordance test through SPSS is used. Table 1 shows the variables and each of the indicators that are developed in this study.

Table 1. Variable grouping and naming

| Variable | Indicator | Code |
|--|---|------|
| Role of Technology in Work Environment | With the internet, I can do work from anywhere | T1 |
| | I think office workspaces are unnecessary | T2 |
| | I can work at any time of the day | T3 |
| | I often work outside office hours | T4 |
| | I can move my work devices anywhere | T5 |
| | I can work using other devices remotely | T6 |
| | In my opinion, workspaces need to be equipped with an internet connection | T7 |
| | I think physical meeting with colleagues are unnecessary | T8 |
| Privacy (P) | PKL When working, I need to be able to see the people around me | P1 |
| | PKS When working, I don't want to be seen by the people around me | P2 |
| | PKL When working, I need to be able to hear the dynamic of the office | P3 |
| | PKS When working, I don't want to be heard by the people around me | P4 |
| | PKS I need to concentrate when working, so any interaction needs prior notice | P5 |
| | PKL Workspace layout should be open to prioritize togetherness with colleagues | P6 |
| | PKS I need a personal office to show social status | P7 |
| | PKS I need a workspace where I can open it to see other workers when I need to and close it when I do not. | P8 |
| Noise (K) | KKS My office needs to be protected from loud noises | K1 |
| | KKS I am distracted if my office is exposed to loud noises for a long period | K2 |
| | KKL I am not bothered by a colleague's music or phone call | K3 |
| | KKL I am uncomfortable working in a completely silent office | K4 |
| | KKL Workspace layout should be open so that the audio atmosphere of the workspace blends in with the office environment | K5 |
| | KKS I need a closed workspace to show social status | K6 |
| | KKS I need a closed workspace so that I can concentrate | K7 |
| Space Comfort (R) | RKL My workspace can accommodate standard-sized furniture | R1 |
| | RKL My workspace is adequate that I can reach what I need quickly | R2 |
| | RKL I can accommodate guests in my workspace | R3 |
| | RKL Workspace uses a shared facility such as printer, scanner, etc. | R4 |
| | RKS I can place my personal stuff in my workspace | R5 |
| | RKS I need a large workspace to show social status | R6 |
| Interpersonal Relationship (I) | IKS I think interactions unrelated to work are unnecessary at work | I1 |
| | IKS Interactions with colleagues should be limited to certain hours and not when at work | I2 |
| | IKS I cannot be in the same room with a colleague I dislike | I3 |
| | IKL The manager is easily met | I4 |
| | IKL The manager should monitor employees' performance at all times | I5 |
| | IKL The manager should work together with his teammates | I6 |

Detail: KL = Collaboration; KS = Concentration

DATA ANALYSIS

Respondents are millennials in Surabaya with at least 1 year of work experience. Data gathered from questionnaires given out both online and offline to 200 respondents yielded 181 eligible respondents after selection according to the criteria. Respondents' demographic description can be seen in Table 2.

Table 2. Demographic data of study subject

| Information | Gender | | Total | Percentage |
|---|--------|--------|-------|------------|
| | Male | Female | | |
| Age | | | | |
| 20-24 | 31 | 60 | 91 | 50% |
| 25-28 | 22 | 25 | 47 | 26% |
| 29-32 | 17 | 8 | 25 | 14% |
| 33-36 | 6 | 6 | 12 | 7% |
| 37-40 | 3 | 3 | 6 | 3% |
| Education | | | | |
| Highschool/Vocational Diploma / Undergraduate | 8 | 8 | 16 | 9% |
| Graduate | 61 | 89 | 150 | 83% |
| | 10 | 5 | 15 | 8% |
| Work Experience | | | | |
| 1-5 | 59 | 86 | 145 | 80% |
| 6-10 | 9 | 11 | 20 | 11% |
| >10 | 11 | 5 | 16 | 9% |
| Occupation | | | | |
| Private sector | 57 | 78 | 135 | 75% |
| Civil servants | 3 | 1 | 4 | 2% |
| Freelance | 11 | 19 | 30 | 17% |
| Self-employed | 7 | 3 | 10 | 6% |
| Teacher | 1 | 1 | 2 | 1% |
| Field of Work | | | | |
| Creative Arts & Design | 24 | 28 | 52 | 29% |
| Property | 6 | 9 | 15 | 8% |
| Management | 19 | 40 | 59 | 33% |
| Education | 2 | 3 | 5 | 3% |
| Technical | 12 | 1 | 13 | 7% |
| Information and Technology | 7 | 2 | 9 | 5% |
| Industry | 3 | 9 | 12 | 7% |
| Health | 1 | 1 | 2 | 1% |
| Trade | 4 | 7 | 11 | 6% |
| Others | 1 | 2 | 3 | 2% |
| Work Position | | | | |
| Staff | 48 | 65 | 113 | 62% |
| Manager | 8 | 7 | 15 | 8% |
| Supervisor | 7 | 8 | 15 | 8% |
| Director | 5 | 0 | 5 | 3% |
| Owner | 10 | 19 | 29 | 16% |
| Teacher | 1 | 3 | 4 | 2% |

This study uses 5 (five) variables which are technology's role in work environment, privacy, noise, spatial comfort, interpersonal relationship as seen in Table 1, and the validity and reliability tests. In Table 3, privacy variable has 1 indicator with a significance value of <0.05 which means it is invalid and needs to be discarded. The indicator is the workspace control to open and close the workspace (P8). Meanwhile, in the reliability test, Cronbach's alpha value of variables of noise and spatial comfort is <0.06 , so indicators of workspace is protected from loud noises (K1), workspace is protected from loud noises over long periods (K2), and workspace is able to accommodate guests (R3) are not used.

Table 3. Validity and reliability test results

| Indicator | Validity (Pearson Correlation) | Reliability (Cronbach's Alpha) |
|-----------|--------------------------------|--------------------------------|
| T1 | 0.637* | 0.642 |
| T2 | 0.501* | |
| T3 | 0.689* | |
| T4 | 0.524* | |
| T5 | 0.630* | |
| T6 | 0.689* | |
| T7 | 0.263* | |
| T8 | 0.241* | |
| P1 | 0.605* | 0.743 |
| P2 | 0.746* | |
| P3 | 0.543* | |
| P4 | 0.717* | |
| P5 | 0.612* | |
| P6 | 0.591* | |
| P7 | 0.430* | |
| K3 | 0.584* | 0.676 |
| K4 | 0.634* | |
| K5 | 0.581* | |
| K6 | 0.528* | |
| K7 | 0.551* | |
| R1 | 0.566* | 0.639 |
| R2 | 0.625* | |
| R4 | 0.538* | |
| R5 | 0.607* | |
| R6 | 0.609* | |
| I1 | 0.629* | 0.639 |
| I2 | 0.712* | |
| I3 | 0.511* | |
| I4 | 0.592* | |
| I5 | 0.555* | |
| I6 | 0.615* | |

Detail: *p-value < 0.05

Table 4 shows that the existing technology is being used by millennials to show the need for a workspace as a gathering spot to discuss work stuff with colleagues. In the variable of privacy, millennials prioritize togetherness with colleagues. In the variable of noise, millennials prefer a work environment that blends with the surroundings, but at the same time conducive to be able to concentrate. In the variable of spatial comfort, millennials do not need a spacious private workspace to show social status. Millennials even do not mind to use shared facilities such as printers, scanners, etc. In the variable of interpersonal relationship, millennials prefer informal interactions with fellow colleagues to fight boredom and pressure at work.

Table 4. Respondents' mean value data after validity and reliability test

| Variable | Statement | Mean | Standard Deviation |
|---------------------------------------|---|------|--------------------|
| Technology's Role in Work Environment | T1 With the internet, I can do work from anywhere | 4.33 | 0.995 |
| | T2 I think office workspaces are unnecessary | 2.74 | 1.108 |
| | T3 I can work at any time of the day | 3.77 | 1.010 |
| | T4 I often work outside office hours | 3.53 | 1.152 |

| | | | | |
|----------------------------|----|---|------|-------|
| | T5 | I can move my work devices anywhere | 3.68 | 1.073 |
| | T6 | I can work using other devices remotely | 3.62 | 1.086 |
| | T7 | In my opinion, workspaces need to be equipped with an internet connection | 4.81 | 0.469 |
| | T8 | I think physical meeting with colleagues are unnecessary | 2.17 | 0.910 |
| Privacy | P1 | PKL When working, I need to be able to see the people around me | 3.57 | 0.990 |
| | P2 | PKS When working, I don't want to be seen by the people around me | 2.56 | 1.107 |
| | P3 | PKL When working, I need to be able to hear the dynamic of the office | 2.97 | 1.043 |
| | P4 | PKS When working, I don't want to be heard by the people around me | 2.64 | 1.145 |
| | P5 | PKS I need to concentrate when working, so any interaction needs prior notice | 2.78 | 1.127 |
| | P6 | PKL Workspace layout should be open to prioritize togetherness with colleagues | 3.86 | 0.851 |
| | P7 | PKS I need a personal office to show social status | 2.31 | 0.933 |
| Noise | K3 | KKL I am not bothered by a colleague's music or phone call | 3.38 | 1.127 |
| | K4 | KKL I am uncomfortable working in a completely silent office | 3.20 | 1.068 |
| | K5 | KKL Workspace layout should be open so that the audio atmosphere of the workspace blends in with the office environment | 3.43 | 0.883 |
| | K6 | KKS I need a closed workspace to show social status | 2.09 | 0.929 |
| | K7 | KKS I need a closed workspace so that I can concentrate | 2.97 | 1.085 |
| Spatial Comfort | R1 | RKL My workspace can accommodate standard-sized furniture | 4.15 | 0.714 |
| | R2 | RKL My workspace is adequate that I can reach what I need quickly | 4.14 | 0.724 |
| | R4 | RKL Workspace uses a shared facility such as printer, scanner, etc. | 4.16 | 0.701 |
| | R5 | RKS I can place my personal stuff in my workspace | 4.02 | 0.875 |
| | R6 | RKS I need a large workspace to show social status | 2.22 | 0.915 |
| Interpersonal Relationship | I1 | IKS I think interactions unrelated to work are unnecessary at work | 2.51 | 0.987 |
| | I2 | IKS Interactions with colleagues should be limited to certain hours and not when at work | 2.41 | 1.033 |
| | I3 | IKS I cannot be in the same room with a colleague I dislike | 2.80 | 1.024 |
| | I4 | IKL The manager is easily met | 4.13 | 0.775 |
| | I5 | IKL The manager should monitor employees' performance at all times | 3.34 | 1.024 |
| | I6 | IKL The manager should work together with his teammates | 4.29 | 0.751 |

The analysis is continued with a priority ranking of the workspace type from 1 (most preferred) to 9 (least preferred). The data processed shows the mean value according to each type of workspace. The mean value is then tested using the Kendall concordance test and shows a significance value of less than 0.05. This means that there is a difference of preference in workspace type. The ranking of millennials' preference for workspace type can be seen in Table 5.

Table 5. Mean rank of millennials' preference on workspace type

| Workspace Type | Mean |
|----------------|------|
| Team Space | 3.66 |
| Team room | 4.15 |
| Shared Office | 4.71 |
| Cubicle | 4.73 |
| Open Office | 4.85 |
| Private Office | 5.05 |
| Work Lounge | 5.20 |
| Study Booth | 5.79 |
| Touch Down | 6.86 |

Next, ANOVA test based on millennials' demography is carried out. The demography tested includes gender, age, work position, field of work, and work experience.

a. Gender

There are 79 male and 102 female respondents. ANOVA test results in Table 6 show a significance value on the variable of privacy (PKL) with a p-value of < 0.10 which means that there is a perception difference on the variable of privacy on the collaboration-type workspace based on gender. Men prefer collaboration-type workspaces regarding privacy (PKL) ($\mu=3.52$) compared to women ($\mu=3.34$).

Table 6. ANOVA test based on gender

| Variable | | N | Mean | Std. Deviation | | Df | F | Sig. |
|----------|--------|-----|-------|----------------|---------------|-----|-------|-------|
| PKL | Male | 79 | 3.516 | 0.693 | Between group | 1 | 3.316 | 0.07* |
| | Female | 102 | 3.343 | 0.582 | Within group | 179 | | |
| | Total | 181 | 3.419 | 0.637 | | 180 | | |
| PKS | Male | 79 | 2.668 | 0.880 | Between group | 1 | 1.917 | 0.168 |
| | Female | 102 | 2.498 | 0.770 | Within group | 179 | | |
| | Total | 181 | 2.572 | 0.822 | | 180 | | |
| KKL | Male | 79 | 3.274 | 0.779 | Between group | 1 | 0.933 | 0.335 |
| | Female | 102 | 3.386 | 0.762 | Within group | 179 | | |
| | Total | 181 | 3.337 | 0.769 | | 180 | | |
| KKS | Male | 79 | 2.601 | 0.935 | Between group | 1 | 0.901 | 0.344 |
| | Female | 102 | 2.475 | 0.842 | Within group | 179 | | |
| | Total | 181 | 2.530 | 0.884 | | 180 | | |
| RKL | Male | 79 | 4.127 | 0.538 | Between group | 1 | 0.02 | 0.888 |
| | Female | 102 | 4.115 | 0.542 | Within group | 179 | | |
| | Total | 181 | 4.120 | 0.539 | | 180 | | |
| RKS | Male | 79 | 2.291 | 0.949 | Between group | 1 | 0.959 | 0.329 |
| | Female | 102 | 2.157 | 0.887 | Within group | 179 | | |
| | Total | 181 | 2.215 | 0.915 | | 180 | | |
| IKL | Male | 79 | 3.958 | 0.616 | Between group | 1 | 0.451 | 0.503 |
| | Female | 102 | 3.892 | 0.678 | Within group | 179 | | |
| | Total | 181 | 3.921 | 0.651 | | 180 | | |
| IKS | Male | 79 | 2.549 | 0.724 | Between group | 1 | 0.166 | 0.684 |
| | Female | 102 | 2.595 | 0.782 | Within group | 179 | | |
| | Total | 181 | 2.575 | 0.755 | | 180 | | |

Detail: * p-value < 0.10

b. Age

There are 144 younger millennials respondents (20-29 years old) and 37 older millennials (30-40 years old). ANOVA test in Table 7 shows that there are discrepancies in the variables of privacy (PKS), noise (KKS), and interpersonal relationship (IKL) based on the age group. Younger millennials prefer concentration-type workspaces regarding privacy variable ($\mu=2.63$) compared to older millennials ($\mu=2.35$). Younger millennials also prefer concentration-type workspace regarding noise variable (KKS) ($\mu=2.61$) compared to seasoned millennials ($\mu=2.22$). Furthermore, collaboration-type on the variable of interpersonal relationship (IKL) are more preferred by older millennials ($\mu=4.08$) compared to younger millennials ($\mu=3.88$).

Table 7. ANOVA test based on age

| Variable | Group | N | Mean | Std. Deviation | | Df | F | Sig. |
|----------|---------------------|-----|-------|----------------|---------------|-----|-------|---------|
| PKL | Younger millennials | 144 | 3.410 | 0.643 | Between group | 1 | 0.133 | 0.715 |
| | Older millennials | 37 | 3.453 | 0.618 | Within group | 179 | | |
| | Total | 181 | 3.419 | 0.637 | | 180 | | |
| | | | | | | | | |
| PKS | Younger millennials | 144 | 2.630 | 0.849 | Between group | 1 | 3.603 | 0.059* |
| | Older millennials | 37 | 2.345 | 0.670 | Within group | 179 | | |
| | Total | 181 | 2.572 | 0.822 | | 180 | | |
| | | | | | | | | |
| KKL | Younger millennials | 144 | 3.308 | 0.782 | Between group | 1 | 1.012 | 0.316 |
| | Older millennials | 37 | 3.450 | 0.717 | Within group | 179 | | |
| | Total | 181 | 3.337 | 0.769 | | 180 | | |
| | | | | | | | | |
| KKS | Younger millennials | 144 | 2.611 | 0.880 | Between group | 1 | 6.042 | 0.015** |
| | Older millennials | 37 | 2.216 | 0.838 | Within group | 179 | | |
| | Total | 181 | 2.530 | 0.884 | | 180 | | |
| | | | | | | | | |
| RKL | Younger millennials | 144 | 4.108 | 0.542 | Between group | 1 | 0.379 | 0.539 |
| | Older millennials | 37 | 4.169 | 0.531 | Within group | 179 | | |
| | Total | 181 | 4.120 | 0.539 | | 180 | | |
| | | | | | | | | |
| RKS | Younger millennials | 144 | 2.264 | 0.931 | Between group | 1 | 1.985 | 0.161 |
| | Older millennials | 37 | 2.027 | 0.833 | Within group | 179 | | |
| | Total | 181 | 2.215 | 0.915 | | 180 | | |
| | | | | | | | | |
| IKL | Younger millennials | 144 | 3.880 | 0.665 | Between group | 1 | 2.847 | 0.093* |
| | Older millennials | 37 | 4.081 | 0.574 | Within group | 179 | | |
| | Total | 181 | 3.921 | 0.651 | | 180 | | |
| | | | | | | | | |
| IKS | Younger millennials | 144 | 2.620 | 0.757 | Between group | 1 | 2.612 | 0.108 |
| | Older millennials | 37 | 2.396 | 0.732 | Within group | 179 | | |
| | Total | 181 | 2.575 | 0.755 | | 180 | | |
| | | | | | | | | |

Detail: * significance < 0.10; ** significance < 0.05

c. Work Position

117 of millennial respondents work as a staff and 64 other work at the managerial level. Table 8 shows that in ANOVA test did not show any difference in collaboration or concentration-type workspace in privacy variable, noise, spatial comfort, and interpersonal relationship between the millennial generations based on work position, which is as a staff or as a manager.

Table 8. ANOVA test based on work position

| Variable | Group | N | Mean | Std. Deviation | | Df | F | Sig. |
|----------|---------|-----|-------|----------------|---------------|-----|-------|-------|
| PKL | Staff | 117 | 3.410 | 0.596 | Between group | 1 | 0.055 | 0.814 |
| | Manager | 64 | 3.434 | 0.710 | Within group | 179 | | |
| | Total | 181 | 3.419 | 0.637 | | 180 | | |

| | | | | | | | | |
|-----|---------|-----|-------|-------|---------------|-----|-------|-------|
| PKS | Staff | 117 | 2.524 | 0.841 | Between group | 1 | 1.144 | 0.286 |
| | Manager | 64 | 2.660 | 0.786 | Within group | 179 | | |
| | Total | 181 | 2.572 | 0.822 | | 180 | | |
| KKL | Staff | 117 | 3.362 | 0.754 | Between group | 1 | 0.343 | 0.559 |
| | Manager | 64 | 3.292 | 0.800 | Within group | 179 | | |
| | Total | 181 | 3.337 | 0.769 | | 180 | | |
| KKS | Staff | 117 | 2.500 | 0.926 | Between group | 1 | 0.390 | 0.533 |
| | Manager | 64 | 2.586 | 0.805 | Within group | 179 | | |
| | Total | 181 | 2.530 | 0.884 | | 180 | | |
| RKL | Staff | 117 | 4.141 | 0.532 | Between group | 1 | 0.494 | 0.483 |
| | Manager | 64 | 4.082 | 0.555 | Within group | 179 | | |
| | Total | 181 | 4.120 | 0.539 | | 180 | | |
| RKS | Staff | 117 | 2.214 | 0.945 | Between group | 1 | 0.001 | 0.972 |
| | Manager | 64 | 2.219 | 0.863 | Within group | 179 | | |
| | Total | 181 | 2.215 | 0.915 | | 180 | | |
| IKL | Staff | 117 | 3.889 | 0.674 | Between group | 1 | 0.794 | 0.374 |
| | Manager | 64 | 3.979 | 0.608 | Within group | 179 | | |
| | Total | 181 | 3.921 | 0.651 | | 180 | | |
| IKS | Staff | 117 | 2.595 | 0.784 | Between group | 1 | 0.251 | 0.617 |
| | Manager | 64 | 2.536 | 0.704 | Within group | 179 | | |
| | Total | 181 | 2.575 | 0.755 | | 180 | | |

Detail: * significance < 0.10; ** significance < 0.05

d. Field of Work

Millennial respondents that work in the field of creative arts and design totaled 52, while there are 59 in management, 22 in technical, and 48 in other fields. Table 9 shows the difference between the variables of spatial comfort (RKL) and interpersonal relationship (IKL) in millennials based on the field of work. Table 10 shows that millennials who work in the field of creative arts and design prefer collaboration workspaces for spatial comfort (RKL) ($\mu=4.34$) compared to millennials working in other fields ($\mu=3.90$) and an interpersonal relationship that leans towards collaborative (IKL) on millennials in the field of creative arts and design ($\mu=4.12$) compared to millennials in other fields ($\mu=3.79$).

Table 9. ANOVA test based on the field of work

| Variable | | N | Mean | Std. Deviation | | Df | F | Sig. |
|----------|------------------------|-----|-------|----------------|-------------------------------|-----|-------|--------|
| KKL | Creative Arts & Design | 52 | 3.462 | 0.841 | Between group Within group | 3 | 1.842 | 0.141 |
| | Management | 59 | 3.424 | 0.729 | | | | |
| | Technical | 22 | 3.212 | 0.820 | | | | |
| | Others | 48 | 3.153 | 0.687 | | | | |
| | Total | 181 | 3.337 | 0.769 | Total | 180 | | |
| KKS | Creative Arts & Design | 52 | 2.462 | 0.954 | Between group Within group | 3 | 1.810 | 0.147 |
| | Management | 59 | 2.449 | 0.913 | | | | |
| | Technical | 22 | 2.932 | 0.917 | | | | |
| | Others | 48 | 2.521 | 0.714 | | | | |
| | Total | 181 | 2.530 | 0.884 | Total | 180 | | |
| RKL | Creative Arts & Design | 52 | 4.341 | 0.483 | Between group Within group | 3 | 6.264 | 0.000* |
| | Management | 59 | 4.127 | 0.514 | | | | |

| | | | | | | | | |
|-----|------------------------|-----|-------|-------|---------------|-----|-------|--------|
| | Technical | 22 | 4.068 | 0.507 | | | | |
| | Others | 48 | 3.896 | 0.560 | | | | |
| | Total | 181 | 4.120 | 0.539 | Total | 180 | | |
| RKS | Creative Arts & Design | 52 | 2.135 | 0.886 | Between group | 3 | 1.477 | 0.223 |
| | Management | 59 | 2.153 | 0.827 | | 177 | | |
| | Technical | 22 | 2.591 | 0.959 | | | | |
| | Others | 48 | 2.208 | 1.010 | | | | |
| | Total | 181 | 2.215 | 0.915 | Total | 180 | | |
| IKL | Creative Arts & Design | 52 | 4.122 | 0.657 | Between group | 3 | 2.633 | 0.051* |
| | Management | 59 | 3.853 | 0.659 | | 177 | | |
| | Technical | 22 | 3.924 | 0.534 | | | | |
| | Others | 48 | 3.785 | 0.650 | | | | |
| | Total | 181 | 3.921 | 0.651 | Total | 180 | | |
| IKS | Creative Arts & Design | 52 | 2.500 | 0.796 | Between group | 3 | 1.702 | 0.168 |
| | Management | 59 | 2.458 | 0.780 | | 177 | | |
| | Technical | 22 | 2.667 | 0.651 | | | | |
| | Others | 48 | 2.757 | 0.704 | | | | |
| | Total | 181 | 2.575 | 0.755 | Total | 180 | | |

Detail: * significance < 0.10; ** significance < 0.05

Table 10. Mean value difference across the field of work with Tukey Post-hoc test

| | | Variable | | Mean Diff. | Std. Error | Sig. |
|-----|-----------|------------------------|------------------------|------------|------------|---------|
| RKL | Tukey HSD | Creative Arts & Design | Management | 0.214 | 0.098 | 0.133 |
| | | | Technical | 0.273 | 0.131 | 0.164 |
| | | | Others | 0.446 | 0.103 | 0.000** |
| | | Management | Creative Arts & Design | -0.214 | 0.098 | 0.133 |
| | | | Technical | 0.059 | 0.129 | 0.968 |
| | | | Others | 0.231 | 0.100 | 0.102 |
| | | Technical | Creative Arts & Design | -0.273 | 0.131 | 0.164 |
| | | | Management | -0.059 | 0.129 | 0.968 |
| | | | Others | 0.172 | 0.133 | 0.567 |
| | | Others | Creative Arts & Design | -0.446 | 0.103 | 0.000** |
| | | | Management | -0.231 | 0.100 | 0.102 |
| | | | Technical | -0.172 | 0.133 | 0.567 |
| IKL | Tukey HSD | Creative Arts & Design | Management | 0.269 | 0.122 | 0.128 |
| | | | Technical | 0.198 | 0.163 | 0.622 |
| | | | Others | 0.337 | 0.129 | 0.047** |
| | | Management | Creative Arts & Design | -0.269 | 0.122 | 0.128 |
| | | | Technical | -0.071 | 0.160 | 0.971 |
| | | | Others | 0.068 | 0.125 | 0.947 |
| | | Technical | Creative Arts & Design | -0.198 | 0.163 | 0.622 |
| | | | Management | 0.071 | 0.160 | 0.971 |
| | | | Others | 0.140 | 0.165 | 0.834 |
| | | Others | Creative Arts & Design | -0.337 | 0.129 | 0.047** |
| | | | Management | -0.068 | 0.125 | 0.947 |
| | | | Technical | -0.140 | 0.165 | 0.834 |

Detail: * significance < 0.10; ** significance < 0.05

e. Work Experience

There are 104 millennials who have worked for less than 3 years, and 77 who have worked for more than 3 years. Table 11 shows the difference of privacy variable (PKL), noise variable (KKL), and interpersonal relationship variable (IKL) regarding work experience. Millennials

who have worked for less than 3 years have a lower preference towards collaboration-type workspace on privacy variable ($\mu=3.34$ vs $\mu=3.52$), noise variable (KKL) ($\mu=3.25$ vs $\mu=3.46$), and interpersonal relationship variable (IKL) ($\mu=3.82$ vs $\mu=4.05$) compared to those who have worked for more than 3 years.

Table 11. ANOVA test based on work experience

| Variable | | N | Mean | Std. Deviation | | Df | F | Sig. |
|----------|-----------|-----|-------|----------------|------------|-----|-------|---------|
| PKL | < 3 years | 104 | 3.344 | 0.649 | Intergroup | 1 | 3.415 | 0.066* |
| | ≥ 3 years | 77 | 3.519 | 0.609 | Intragroup | 179 | | |
| | Total | 181 | 3.419 | 0.637 | Total | 180 | | |
| PKS | < 3 years | 104 | 2.654 | 0.792 | Intergroup | 1 | 2.452 | 0.119 |
| | ≥ 3 years | 77 | 2.461 | 0.854 | Intragroup | 179 | | |
| | Total | 181 | 2.572 | 0.822 | Total | 180 | | |
| KKL | < 3 years | 104 | 3.250 | 0.728 | Intergroup | 1 | 3.168 | 0.077* |
| | ≥ 3 years | 77 | 3.455 | 0.811 | Intragroup | 179 | | |
| | Total | 181 | 3.337 | 0.769 | Total | 180 | | |
| KKS | < 3 years | 104 | 2.577 | 0.832 | Intergroup | 1 | 0.677 | 0.412 |
| | ≥ 3 years | 77 | 2.468 | 0.951 | Intragroup | 179 | | |
| | Total | 181 | 2.530 | 0.884 | Total | 180 | | |
| RKL | < 3 years | 104 | 4.072 | 0.552 | Intergroup | 1 | 1.952 | 0.164 |
| | ≥ 3 years | 77 | 4.185 | 0.518 | Intragroup | 179 | | |
| | Total | 181 | 4.120 | 0.539 | Total | 180 | | |
| RKS | < 3 years | 104 | 2.192 | 0.860 | Intergroup | 1 | 0.156 | 0.693 |
| | ≥ 3 years | 77 | 2.247 | 0.989 | Intragroup | 179 | | |
| | Total | 181 | 2.215 | 0.915 | Total | 180 | | |
| IKL | < 3 years | 104 | 3.824 | 0.644 | Intergroup | 1 | 5.574 | 0.019** |
| | ≥ 3 years | 77 | 4.052 | 0.642 | Intragroup | 179 | | |
| | Total | 181 | 3.921 | 0.651 | Total | 180 | | |
| IKS | < 3 years | 104 | 2.676 | 0.745 | Intergroup | 1 | 4.519 | 0.035 |
| | ≥ 3 years | 77 | 2.437 | 0.752 | Intragroup | 179 | | |
| | Total | 181 | 2.575 | 0.755 | Total | 180 | | |

Detail: * significance < 0.10; ** significance < 0.05

DISCUSSION

This study shows that the advancement of today's technology does not eradicate millennials' need for offices as workspaces to gather with fellow colleagues (Perdana, 2019; Arvian & Surya, 2019). Although millennials have a different preference in the choice of workspace types, based on a comprehensive analysis, millennials prefer workspaces with characteristics as described below.

a. Collaboration and Concentration Characteristics on Workspaces

Based on the study conducted on variables of privacy, noise, spatial comfort, and interpersonal relationship, workspace type with collaboration characteristic is preferred by millennials. In the variable of privacy, millennials prefer an open-space workspace to open the possibility of having a sense of togetherness with fellow colleagues (Arvian & Surya, 2019; Lois, 2019; Kemperman & Appel-Meulenbroek, 2019). Based on interview results, this is caused by the discomfort millennials feel when working alone and thus feel the need for a co-worker's presence. On the variable of noise, millennials tend to feel uncomfortable working in a completely silent workspace. Millennials prefer an open workspace, so the audio environment of the office can serve as background noise of their workspace. They are not comfortable with a silent office, as it might trigger the feeling of being the only one in the office. In the variable of spatial comfort, millennials prefer a workspace with just the right size to reach

what they need quickly. Moreover, millennials do not mind sharing facilities with fellow colleagues. On the variable of interpersonal relationship, millennials tend to expect a manager's presence in the same workspace as his team (Perdana, 2019; Kemperman & Appel-Meulenbroek, 2019; Joy & Haynes, 2011). That way, millennials can get immediate guidance and support when faced with a problem or difficulty. Aside from that, managers can also get an efficient and hastened performance of the team. Preference for workspaces with a collaboration characteristic is also affected by millennials' demography. Men prefer an open workspace where they are able to see and hear others around them compared to women (Morrison & Smollan, 2019). Millennials with a work experience of more than 3 years prefer an open workspace with office environment blended-in where they are able to interact with other colleagues with ease compared to millennials with a work experience of fewer than 3 years. This is also affected by the age of the millennials. Millennials with the age of 30 years and above also prefer workspaces where it is possible to interact with other colleagues compared to those who are less than 30 years old. Field of work also affects millennials' preference for collaboration workspaces. Millennials in the field of creative arts and design prefer workspaces that help them interact with other workers and an efficient workspace compared to millennials working in other fields.

Concentration characteristic is less of a need for millennials (Arvian & Surya, 2019). On the variable of privacy, an open workspace enables individuals to be seen and be heard by other colleagues, but they are not bothered by this (Joy & Haynes, 2011). Psychological comfort to show social status by having a private workspace is not of importance for millennials. The variable of physical comfort of noise is the most important, by having a workspace protected from loud noises and over long periods to avoid discomfort and to perform the tasks well, but the psychological comfort of having a workspace separated from others is not important. Millennials sometimes need a conducive atmosphere when doing specific activities (Joy & Haynes, 2011). On the variable of spatial comfort, physical comfort is the priority. Workers need a sizeable room to perform well. Millennials put their personal belongings as a territory mark of their workspaces (Kemperman & Appel-Meulenbroek, 2019). This phenomenon helps colleagues who are trying to find them. A spacious workspace to show social status is not of importance for millennials. Millennials' interpersonal relationship is not affected by work-unrelated interactions during work hours (Putri & Rahardjo, 2019; Kemperman & Appel-Meulenbroek, 2019). Based on interview results, this condition is useful in fighting boredom and to reduce stress at work. Hence, millennials also do not mind interactions with colleagues when working (Arvian & Surya, 2019; Putri & Rahardjo, 2019). Regarding the tolerance for colleagues they are not fond of, the majority of millennials are neutral and even doubt that it is caused by a lack of personal relationship. Concentration-type workspaces are less preferred but necessary. Millennials who are less than 30 years old need a conducive workspace compared to those who aged 30 and above.

b. Workspace Type Preference

The main element to consider in workspace type characteristic is the size of the space and how closed it is. Based on those two elements there are 9 office types which are open office, team space, cubicle, private office, shared office, team room, study booth, work lounge, and touchdown.



Figure 1. Team Space Workspace Environment

Based on study results, millennials prefer team space the most, with a mean rank value of 3.66, followed by team room, shared office, cubicle, open office, private office, work lounge, study booth and touch down. Based on the ranking of workspace preference in millennials, it can be seen that the preferred workspace prioritizes collaboration such as team space, team room, and shared office compared to cubicle and private office. Even so, millennials also need a bit of privacy or social territory, thus leaning towards team space, team room, and shared office compared to open office as an open workspace.

Team space is a workspace with a characteristic of a high level of interaction, medium concentration, and low privacy. Team space workspace type is highly favored by millennials as it enables them to interact and collaborate with colleagues. Moreover, this type of workspace also enables its users to interact with others in the vicinity. Team room is a workspace with a characteristic of a high level of interaction, medium concentration, and medium privacy. This type of workspace is as favored by millennials as team space, but with a separator to create a boundary from the neighboring environment, it is slightly less preferred. Shared office is a workspace with a characteristic of medium interaction, high concentration, and high privacy. This type of workspace is also preferred by millennials as it allows the users to collaborate with colleagues, but with a more limited number of users compared to team room. Cubicle is a workspace with a characteristic of low interaction, medium concentration, and medium privacy. This type of workspace is less preferred by millennials as users have less possibility to interact with other colleagues. Open office is a workspace with a characteristic of high interaction, low concentration, and very low privacy. It is less preferred by millennials as privacy is very low. Private office is a workspace with a characteristic of low interaction, high concentration, and very high privacy. This is also less popular among millennials as it prioritizes privacy and concentration over collaboration. Work lounge is a workspace with a café or canteen feel to it, with a characteristic of having high interaction, low concentration, and very low privacy. Akin to open office, it is also less preferred by millennials as it does not help them to concentrate to perform better. Study booth is a workspace used in short terms with a characteristic of low interaction, high concentration, and very high privacy. Similar to private office, it is also less preferred by millennials as it prioritizes concentration over collaboration, and its short-term uses do not meet the needs of millennials users. Touchdown is a workspace used for less than 10 minutes in duration where it has a characteristic of low interaction, low concentration, and low privacy. This type of workspace is less preferred by millennials because aside from having low privacy, it also does not meet the

millennials' need of having a permanent post where they can use it long enough to complete their tasks.



Figure 2. Team Space and Private Office Workspace Environment

CONCLUSION

Millennials as a generation who are able to exploit the advantages and flexibility of technology still need offices as a gathering place with fellow colleagues. In choosing workspace characteristics, millennials tend to prioritize collaboration. Therefore, millennials have a preference for workspaces with a high level of interaction, medium concentration, and do not prioritize privacy. Millennials are not bothered by the consequences of workspaces that prioritize collaboration, which are less privacy, distractions caused by others' activities, and the unease from seniors' direct supervision. Millennials think that self-acknowledgment by showing social status through their workspaces is not of importance; they prioritize social life and togetherness with their colleagues, so their preferred workspace type is team space.

There are differences in preferences in millennials' demographic analysis based on age and field of work. Therefore, a complementary workspace type with consideration for the noise and privacy aspect needs to be provided. Workspaces with concentration-type characteristics are also needed to accommodate certain activities that require a high concentration or with a more secretive nature. To accommodate these needs, team space workspaces can also be equipped with a few private offices or study booths.

This study benefits property managers as office-space managers to merge workspace types along with the supporting facilities to be offered to millennials so they can be more productive. By understanding the work culture and psychological condition of millennials, workspaces and work atmosphere can be developed further where they can be collaborative, but still address the millennials' need for privacy so that the property market can be more dynamic.

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