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The Preference of Millennial in Surabaya Towards Workspace Characteristics

Chrisna Hadi Juwono[1], Timoticin Kwanda[2], and Njo Anastasia[3*]

[1)] Civil Engineering Master Program, Petra Christian University, Surabaya, Indonesia
[2)] Architecture Program, Petra Christian University, Surabaya, Indonesia
[3)] Finance & Investment Program, Petra Christian University, Surabaya, Indonesia
[*)] email correspondence: anas@petra.ac.id

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Abstract

Millennial generation grows in the advance of information technology and dominates the productive age in Surabaya City. Their capability in operating technology makes work activities more efficient, as a result the need for concentration in workspaces could be reduced. Previous research focused on millennial's workspace, but it was limited to one workspace. Therefore, this research is conducted to find the millennial's preferences in the type of workspace character. Data was collected by questionnaire. Hypothesis testing using ANOVA and Kendall's concordance test. The result showed that the workspace optimize concentration is less demanded. Millennial are comfortable in workspace that collaborate with the other workers, such as team rooms, although 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 fulfil psychological and occupational needs. However, the previous study was only limited to one type of workspace,

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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 analysed 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.

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 it's 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

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Variable		Indicator	Code
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

RESULTS AND DISCUSSION

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	8	8	16	9
Diploma / Undergraduate	61	89	150	83
Graduate	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

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Information	Gender		Total	Percentage
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

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Indicator	Validity (Pearson Correlation)	Reliability (Cronbach's Alpha)
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	Std. dev.
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

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Variable			Statement	Mean	Std. dev.
	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.

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

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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) (μ=3.52) compared to women (μ=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

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 (μ=2.63) compared to older millennials (μ=2.35). Younger millennials also prefer concentration-type workspace regarding noise variable (KKS) (μ=2.61) compared to seasoned millennials ((μ=2.22). Furthermore, collaboration-type on the variable of interpersonal relationship (IKL) are more preferred by older millennials (μ=4.08) compared to younger millennials (μ=3.88).

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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

The respondents were 117 of millennial respondents who 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,

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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

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) (μ=4.34) compared to millennials working in other fields (μ=3.90) and an interpersonal relationship that leans towards collaborative (IKL) on millennials in the field of creative arts and design (μ=4.12) compared to millennials in other fields (μ=3.79).

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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	3	1.842	0.141
	Management	59	3.424	0.729	Within group	177		
	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	3	1.810	0.147
	Management	59	2.449	0.913	Within group	177		
	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	3	6.264	0.000*
	Management	59	4.127	0.514	Within group	177		
	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	Within group	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	Within group	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	Within group	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

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		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

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 (μ=3.34 vs μ=3.52), noise variable (KKL) (μ=3.25 vs μ=3.46), and interpersonal relationship variable (IKL) (μ=3.82 vs μ=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

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.

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.\\

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.

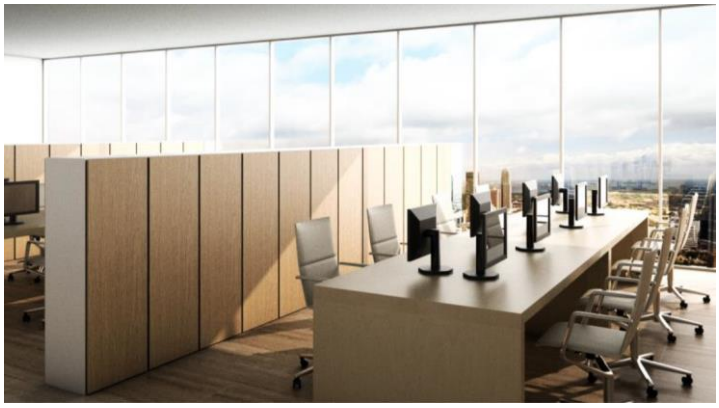

Figure 1. Team Space Workspace Environment

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

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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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