

Performance Attributes of Shophouse Complex Based on Occupant Satisfaction (Case: Complex of Makassar Metro Square Shophouses)

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Abstract

Previous studies revealed that the performance of shophouses was not in optimal condition and the tendency of the development to be more destructive than constructive. The Complex of Makassar Metro Square Shophouses is considered one of the largest shophouse complexes built by developers in Makassar City. This study aims to evaluate the performance of the Makassar Metro Square Shophouse Complex based on the level of occupant satisfaction. This study used a survey method, where the data collection techniques were field observation and questionnaires distributed to 60 residents who were chosen through accidental sampling. Data were then analyzed using descriptive and regression techniques using Microsoft Excel and SPSS 25 applications. The results show that the occupant satisfaction index was at the level of 64.5% and on the interval scale it was at the level of fairly satisfied. The testing of physical attribute variables of the Shophouse Complex (X1) and the supporting facilities of the residential unit (X2) on occupant satisfaction (Y), concludes that the two variables have a significant positive effect. Factors that affect occupant satisfaction can be seen in the quality of the initial design, material quality, occupant characteristics, occupant adaptation, and external factors.

Keywords: Architecture Evaluation; Physical Attributes; Building Performance; Occupants Satisfaction; Shophouse Complex

1. Introduction

There have been many failures in public and private buildings in various countries due to the lack of relevant inclusion coming from building end-users [1]. Planners and developers are required to be able to understand and define what residents want in terms of their needs and feelings, and only then can these expectations be met [2]. The success or failure of a building can be known after being occupied within a certain time using the Building Performance Evaluation (BPE) method. According to de Wilde (2018), evaluation of building performance can be done through stakeholder assessments, utilizing the insights of residents who are most familiar with the environment [3]. Among the various approaches proposed, the concept of satisfaction is the most widely used in evaluating the residential environment [4]. The successful performance of a building or residential environment will be directly proportional to the assessment of the level of occupant satisfaction which ultimately affects the occupant's decision to stay or move [5].

Several studies have revealed that commercial shophouses that have been built in the country so far are not in optimal performance from various aspects. A Shophouse is a term for buildings in Indonesia that are generally made of two to five floors, where the function is

more than one, namely residential and commercial functions, the lower floor is used as a place of business or office, while the upper floor is used as a residence [6]. According to Purwanti (2012), most of the commercial shophouses that are built are only used as investment properties and are no longer a necessity for improving living standards [7]. Meanwhile, Sugiharto (2017) in his research states that only about 10% of shophouse buildings in Indonesia are used as houses and shops by their owners [8]. Most of the research found regarding shophouses or shophouse complexes in the country also explains that shophouses that have been built are more destructive than constructive; growth that is not following urban planning [9] loss of the original face of the city; an uncontrolled volume of shophouse construction [10]; and a less than ideal residential design typology (focusing on economic value and overriding residential needs) [8].

In Makassar City, based on field observations, commercial shophouses that have been inhabited (double as both a house and a shop), is largely dependent on artificial ventilation mechanisms and artificial lighting during the day. Adaptation of space simplification for efficiency by eliminating open voids (light wells) in the middle of the building [9], thus creating high isolation from the outside of the building. As a result, the circulation of airflow in the room becomes low and the heat in the room resulting from the operation of the building or the

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induction of solar radiation is trapped. While during the day access to natural light in the building is very limited, especially in the middle of the building causing dependence on artificial lighting.

The perception inherent in the general public emphasizes shophouses for business functions rather than residential ones. According to Wahyudi (2005), the existence of shophouses in contemporary urban architecture is more intended as a place of business that is flexible, easy to build, and inexpensive [11]. As a result, when inhabited, most commercial shophouses will experience changes, especially in their spatial pattern due to the uncertainty of their spatial function. This will affect the assessment of occupant satisfaction.

The wave of rapid and massive construction of shophouses in the last few decades should be balanced with optimal performance because its use will significantly affect the quality of life for its residents. In line with the research by Mohit & Azim (2012), the development of a residential complex as a whole should consider the fulfillment of two important aspects, namely the residential aspect and the outside aspect of the residence, for a shophouse complex the residential unit aspect consists of residential features and business place features while the outside the residence consists of supporting features of residential units, features of public facilities around the complex and features of an integrated social environment. The results show and confirm that the quality of certain physical characteristics in a residential environment is very important so that it affects the level of satisfaction of residents of housing [2].

According to Preiser & Hardy (2017, 31); (de Wilde, 2018, 104), performance on the features of residential units consists of features of spatial quality, thermal quality, air quality, acoustic quality, visual quality, and building integrity [3], [12]. According to the Makassar City Regulation Number 9 of 2011, (Article 11), it is stated that the housing and settlement areas (outside residential features) consist of: infrastructure including a road network and other complementary buildings; sewerage network; rainwater sewer network (drainage); waste management site. Meanwhile, the facilities include educational facilities; health facilities; worship facilities; government facilities and public services; recreational and sports facilities; burial facilities; landscaping facilities and green open spaces; commercial facilities; parking facilities). Utilities include a clean water network; electric network; telephone network; gas network; firefighter; transportation network; public street lighting.

The current state of the art in building performance evaluation research or housing satisfaction assessments mostly chooses single building cases, whether public or private or choosing housing complexes, and has been widely carried out in various countries. In Nigeria, Amole (2009), conducted a study on occupancy satisfaction in student housing using a survey method revealed that 53% of residents were dissatisfied with their place of residence [4]. Meanwhile, in the Maldives, research on the assessment of community occupancy satisfaction by Mohit & Azim (2012), which took the case of Public

Housing in Hulhumale City, using the same method revealed that the majority of residents were slightly satisfied, especially with the provision of public services and facilities, compared to with satisfaction with the physical characteristics of the housing unit and the social environment in the housing area [5]. In the country, research on housing occupant satisfaction was carried out by Jocom (2015) with the case of Griya Paniki Indah Manado Housing with a survey method which revealed that residents of Griya Paniki Indah housing were satisfied with the quality of Griya Paniki Indah housing with a satisfaction index value of 72.14%. [13]. Research on the phenomenon of shophouses in Makassar City has been carried out by Amri (2013), regarding the implementation of the space utilization in the development of shophouses and office houses in Makassar City (Case Study: Perintis Kemerdekaan Street and Urip Sumoharjo Street)", using a descriptive method revealed that The results conclude that there is a shift or deviation in the utilization of city spatial rules [9].

The authors have not found any research on building performance evaluation or occupant satisfaction assessment that focuses on the case of buildings with mixed functions such as shophouses or shophouse complexes. Research on shophouses or shophouse complexes has been carried out by many researchers, but most of them use qualitative research intending to reveal the phenomena that occur in shophouses. This performance evaluation research of shophouse complex has novelty as a type of quantitative research using survey method with satisfaction parameter as the main measure of building success rate.

This research on shophouse complex performance that is based on occupant satisfaction aims to measure performance based on people's expectations, needs, and preferences for shophouses. Thus it can determine which factors are important and what types of improvements are needed in the construction and development of shophouses in the future will come. The location of the research was carried out in the Metro Square shophouse complex which was considered to be one of the largest shophouse complexes in Makassar City and was built by a developer. Preliminary observations show a tendency that the performance of the shophouse complex is not optimal, marked by the number of shophouses that are not occupied at the time of observation, as shown in Fig. 1.



Figure 1. Photo of the Metro Square Shophouse Complex situation

2. Research Method

This research is quantitative with a positivistic paradigm. The approach taken is to use the survey method. Data were collected by direct observation technique to identify the physical attributes of the shophouse complex. The physical attributes of the shophouse complex are grouped into features of residential units (micro) and supporting features of residential units (mezzo). Furthermore, questionnaires were distributed to 60 sample units of shophouses from a total of 185 populations using the purposive accidental sampling technique.

2.1. Research location

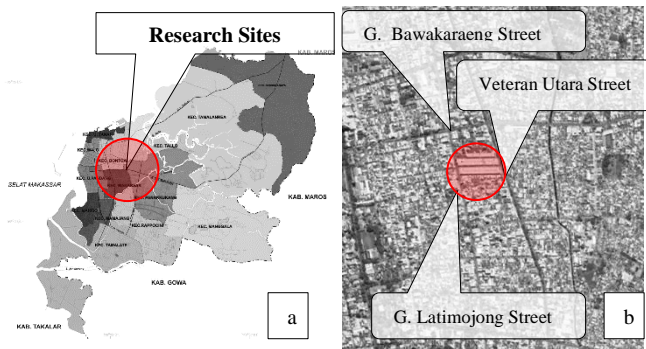


Figure 2. (a) Macro map of research location (Makassar City); (b) Micro map of the location of the Metro Square Ruko Complex.

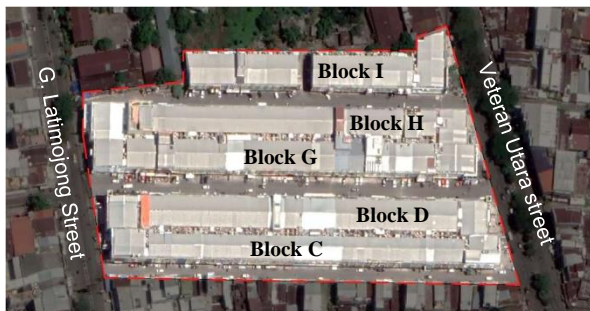


Figure 3. Top view of the Metro Square Shophouse Complex.

Figure 2 shows the location of the Metro Square Shophouse Complex right in the center of Makassar City, to be precise in the village of Lariang Bangi, Makassar District. This shophouse complex was built by the developer with a site area of $\pm 31,000$ m². Consists of five blocks, namely Block C: 41 units, Block D: 42 units, Block G: 41 units, Block H: 41 units, and Block I: 30 units as shown in Fig. 3.

2.2. Shophouse Complex Attribute Performance Assessment

The questionnaire consisted of 6 questions regarding the characteristics of the residents, 25 questions regarding the performance of the physical attributes of the shophouse complex as described in Table 1, and one question regarding the level of satisfaction of the residents of the shophouse complex. The data were then analyzed using cross-tabulation and multiple regression analysis to determine the variables that significantly affect the level of occupant satisfaction. The analysis was carried out using Microsoft Excel 2016 and SPSS 25 applications.

Table 1. Performance parameters of shophouse complex

Attribute Performance	Parameter
Use of space (floors 1,2 and 3)	<ol style="list-style-type: none"> 1. Only a small part is used, 2. Partially used, 3. Mostly used, 4. Entirely used.
Furnished accommodation (floors 1,2 and 3)	<ol style="list-style-type: none"> 1. Only a small part of the furniture needs are accommodated 2. Partially accommodated furniture needs 3. Furniture needs are mostly accommodated 4. All furniture needs are accommodated
Frequency of access to the balcony	<ol style="list-style-type: none"> 1. Never accessed, 2. Rarely accessed, 3. Fairly frequently accessed, 4. Very frequently accessed.
The frequency with which injuries (falls, trips, or extreme exhaustion) occur when climbing or descending stairs	<ol style="list-style-type: none"> 1. Very frequent complaints/injury 2. Frequent complaints/injury 3. Rarely complaints/injury 4. There has never been a complaint/injury
Ease of finding the shop when it is addressed	<ol style="list-style-type: none"> 1. Very often complaints of confusion occur 2. Frequent complaints of confusion 3. Rarely complaints of confusion 4. Never had any complaints
Body condition when not turning on AC/Fan (2nd and 3rd floor)	<ol style="list-style-type: none"> 1. It's easy to sweat 2. Easy to sweat 3. Rarely sweating 4. No sweat
Easy to control opening or closing openings	<ol style="list-style-type: none"> 1. Very difficult 2. It's a bit difficult 3. Rather easy 4. Very easy
Perceived wind speed within the building (2nd and 3rd floors)	<ol style="list-style-type: none"> 1. Not feeling at all 2. Less feel 3. Just feel 4. Feels
Complaints of respiratory symptoms due to particulate molecular infection	<ol style="list-style-type: none"> 1. Very frequent complaints 2. Complaints quite often occur 3. Occasional complaints 4. Never had any complaints
The noise level during break time (night) (2nd and 3rd floor)	<ol style="list-style-type: none"> 1. Very disturbed 2. Fairly disturbed 3. Less disturbed 4. No interference
Condition without lights during the day (2nd and 3rd floor)	<ol style="list-style-type: none"> 1. It's dark 2. Dark 3. Slightly bright 4. Bright
Light intensity from the window	<ol style="list-style-type: none"> 1. Dark 2. Dim 3. Slightly Bright 4. Bright
Wall resistance	<ol style="list-style-type: none"> 1. Massive sprawl at many points 2. Quite a lot of cracks 3. Multiple crack points 4. There is no word yet
Roof resistance	<ol style="list-style-type: none"> 1. There have been too many leak points 2. Quite a lot of leak points 3. There are still a few leak points 4. There has never been a roof leak
Ceiling resistance	<ol style="list-style-type: none"> 1. There have been too many points of damage 2. Quite a lot of damage points 3. Still a few points of damage 4. There has never been a ceiling damage
Ceramic resistance	<ol style="list-style-type: none"> 1. There have been too many points of damage 2. Quite a lot of damage points 3. Still a few points of damage 4. There has never been any damage
Aperture resistance	<ol style="list-style-type: none"> 1. All openings have been damaged 2. Almost all openings have been damaged

	3. There are still a few openings that have been damaged
	4. Never been damaged
Visitor parking capacity	1. Parking visitors mostly take the road 2. Partial visitor parking takes the road 3. Parking visitors take a little bit of the road 4. Parking visitors do not take the road
Pedestrian dimension	1. Pedestrian is very narrow 2. Pedestrian is narrow 3. Pedestrian is a bit wide 4. Pedestrian is very wide
The level of clarity in fire evacuation	1. There is no view at all about the evacuation route 2. It is still unclear about the evacuation route 3. Already quite understand about the evacuation route 4. The evacuation route is very clear
Position of placement of public trash facilities	1. Difficult to access 2. A bit difficult to access 3. Fairly easy to access 4. Very easy to access
Puddle level during heavy rain	1. Long and high stagnant water 2. The water has been stagnant for a long time 3. The water barely stagnates 4. Water is not stagnant
Traffic jam level	1. Jammed all the time 2. A bit jammed 3. Fairly smooth 4. Smooth every time
Accessibility to complex public facilities	1. Difficult to access 2. A bit difficult to access 3. Fairly easy to access 4. Easy to access
The level of crime that occurs in the complex	1. Happens very often 2. It happens quite often 3. Slightly rare 4. Rarely happens

The type of scale used by the researcher is the Likert scale. To determine the interval scale of each measured variable as shown in Table 2, the scale of the measured score is then calculated using the following formula:

$$RS = n (m-1) / m \tag{1}$$

RS = Interval scale

n = Number of Questions

m= Number of Alternative Answers

Lowest Scale: Lowest Score x Number of Samples (n)

Highest Scale: Highest Score x Number of Samples (n)

The number of questions is 25. The instrument uses a Likert scale of 1 for the lowest score and 4 for the highest score. Scale calculation:

Lowest Scale = Lowest Score x Number of Samples (n)

$$1 \times 25 = 25$$

Highest Scale = Highest Score x Number of Samples (n)

$$4 \times 25 = 100$$

$$RS = n (m-1) / m$$

$$RS = 25 (4-1) / 4 = 75 / 4$$

$$RS = 18,75$$

Table 2. Scale range analysis.

Score scale	Scale range	Answer
1	25-43,74	Dissatisfied
2	43,75-62,49	Fairly dissatisfied
3	62,5-81,24	Fairly satisfied
4	81,25-100	Satisfied

3. Results and Discussion

3.1. Description of Occupant Characteristics

Table 3. Statistics of the Metro Square Shophouse Complex resident's characteristics

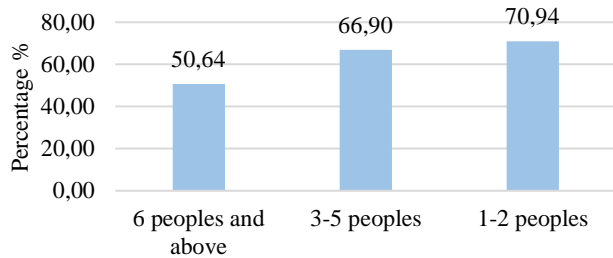
Occupant Characteristics	Sample	Percentage (%)
Number of occupants living	6 people and above	14 23.33
	3-5 people	29 48.33
	1-2 people	17 28.33
Length of occupancy	0-3 years	13 21.67
	4-7 years	27 45
	7 years and over	20 33.33
Rights to shophouse	Tenant	17 28.33
	Owner	43 71.67
Residential characteristics of origin	Rural/Village Area	4 6.67
	County town	8 13.33
Shophouse functions	Makassar City/ Metropolitan City	48 80
	Residential and place of business	52 86.67
	Just stay	8 13.33
Renovation characteristics of the shophouse	Just a place of business	0 0
	Never	9 15
	Don't know	13 21.67
	Once	38 63.33

Table 3 shows that the characteristics of the largest number of occupants in one shophouse unit are 3-5 people, which is a characteristic of the number of simple families. The number of occupants of 1-2 people per unit shophouses consists mostly of newly married couples or residents who are not married but live independently. While the characteristics of the number of occupants of 6 people and over in shophouse have the lowest percentage.

The Complex is dominated by residents who are no longer new, namely more than four years, and the intensity of change of shophouse occupants is relatively low. The success of a development, especially in the case of a shophouse complex, will be directly proportional to the length of time the residents have lived, although many other indices must be considered. For the characteristics of residents who stay for 0-3 years, the average length consists of tenants.

Most of the shophouses are owned and used by residents in following development goals, not owned for property business interests as is often the case. Most of the residents of the Makassar Metro Square Ruko Complex come from Makassar City/other metropolitan cities. The number of residents who come from the Regency City and the Rural/Village environment is relatively small. Most shophouse users function the shophouses they occupy as residences and places of business. Meanwhile, the percentage of users who functioned their shophouses as residential only was low, and there were no shophouse users who functioned their shophouses only as a place of business.

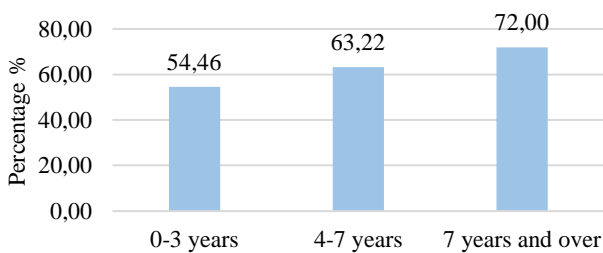
Most of the shophouses that they live in have been renovated. Meanwhile, residents who do not know about the renovation of the shophouse they live in, on average, are residents who have just settled or are new tenants. Meanwhile, the percentage of shophouses that have never been renovated is relatively low.



■ Percentage of Satisfaction with Shophouse Performance Based on Characteristics of Number of Occupants Living (%)

Figure 4. Percentage of satisfaction with shophouse performance based on characteristics of many occupants living.

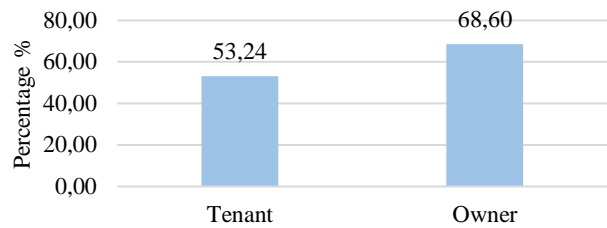
Figure 4 shows that the number of occupants in one shophouse unit greatly affects the level of satisfaction with occupancy. In the case of shophouses, too many occupants (in this case 6 people and above) make the level of satisfaction even lower. This statistic is strongly influenced by spatial variables such as limited space accommodation in shophouses. This is in line with research by Onyekwere & Julia (1997) where the findings noted that most families have more than four people per housing unit and dissatisfaction may be caused by overcrowding [14]. Also in the study Amole (2009) revealed that more than half (53%) of the respondents were dissatisfied with their place of residence and the most significant variable influencing was the social quality of the place of residence, especially the social density [4].



■ Percentage of Satisfaction with Shophouse Performance Based on the Characteristics of the Length of Occupancy (%)

Figure 5. Percentage of satisfaction with shophouse performance based on the characteristics of the length of occupancy.

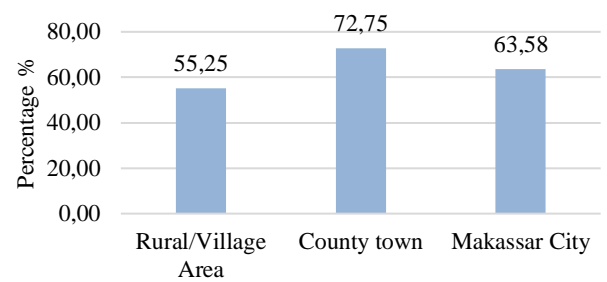
Figure 5 shows that the percentage of satisfaction with the performance attributes of the shophouse complex is also strongly influenced by the length of time the occupants stay. Statistics, in this case, show that the longer the residents stay, the higher the sense of satisfaction with their occupancy. This line with research by Amole (2009); Mohit & Azim (2012) which revealed a positive correlation between length of stay and residence satisfaction [4], [5]. The adaptability factor greatly affects the level of occupant satisfaction, and the longer the occupants stay, the better the adaptation will be.



■ Percentage of Satisfaction with Shophouse Performance Based on Characteristics of Rights to Shophouses (%)

Figure 6. Percentage of satisfaction with shophouse performance based on characteristics of rights to shophouses.

Figure 6 shows that the comparison of satisfaction with shophouse performance between tenants and owners is very significant. Owners show higher satisfaction than tenants. Different research findings by Mohit & Azim (2012) show that residents and owners show lower levels of satisfaction compared to tenants [5]. In the case of a shophouse, one of the influencing factors in determining satisfaction is the freedom to renovate or modify the dwelling according to the occupants' wishes and it is not owned by the tenant, besides the pride factor for a sense of ownership also affects.



■ Percentage of Satisfaction with Shophouse Performance Based on Residential Characteristics of Origin (%)

Figure 7. Percentage of satisfaction with shophouse performance based on residential characteristics of origin.

Figure 7 shows that based on the place of origin, the highest level of satisfaction with shophouse performance is among residents who come from the Regency City Area, then residents who come from the Makassar City Region/other Metropolitan City, and the lowest percentage of satisfaction is among residents who come from the Rural Environment. The results of the study by Onyekwere & Julia (1997) support the conceptual model that explains the relationship between housing norms and housing satisfaction [14]. It is important that housing policies address the issue of appropriate types of structures that are culturally acceptable to different ethnic groups, and meet their needs and expectations. The Regency City and Makassar City areas themselves have environmental characteristics that are almost similar to the conditions of the Makassar Metro Square Complex so that adaptation of the residents is not too difficult. Meanwhile, rural/village environment conditions are very different from complex conditions, especially in the interaction factor with neighbors. Research by Riazi & Emami (2018) shows that interaction with neighbors among low-income families is

a stronger predictor of occupancy satisfaction than planning policies and design principles [15].



Figure 8. Percentage of satisfaction with shophouse performance based on characteristics of shophouse functions.

Figure 8 shows that based on the use of shophouses, the highest level of satisfaction with shophouse performance is among residents who function their shophouses as residences and places of business. The statistics above show that satisfaction with the performance of shophouses that are functioned properly, namely as residences and places of business, is higher than in shophouses that are functioned as residences or only in one of their functions. The design and environment created from the beginning have been designated for residential and business premises so that the adaptation of the function of a residence as well as a place of business is not too difficult for residents.

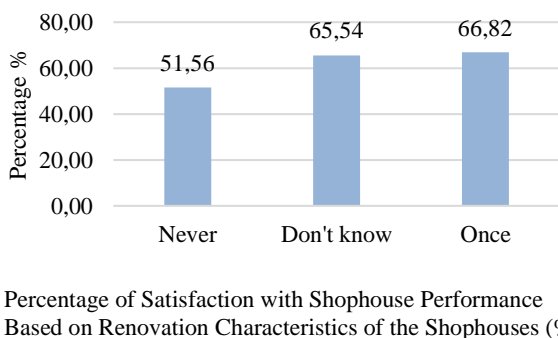


Figure 9. Percentage of satisfaction with shophouse performance based on renovation characteristics of the shophouse.

Figure 9 shows that most of the shophouse complex units have undergone changes, and are directly proportional to the level of occupant satisfaction. These statistics show that renovations to shophouses will have an impact on occupant satisfaction. Renovation is part of the adaptation of residents, by adjusting the needs and preferences of residents will have an impact on their perceived satisfaction. While the study by Jiboye (2012) revealed that the quality of the physical appearance of the house plays a very important role in determining the level of occupant satisfaction, while the renovated building will be directly proportional to the increase in the quality of the physical appearance of the building [2].

3.2. Index of Satisfaction with Physical Attributes

The satisfaction index of the overall physical attributes of the shophouse complex is at 64.25% from

100%. In the interval scale, this value is at the level of fairly satisfied, but this value is also close to the limit of the value of the level of fairly dissatisfied which is 62.25%. Satisfaction with the performance attributes of the shophouse complex is divided into three levels of satisfaction, namely very satisfied, fairly satisfied, and fairly dissatisfied, while there are no variables at the very dissatisfied level.

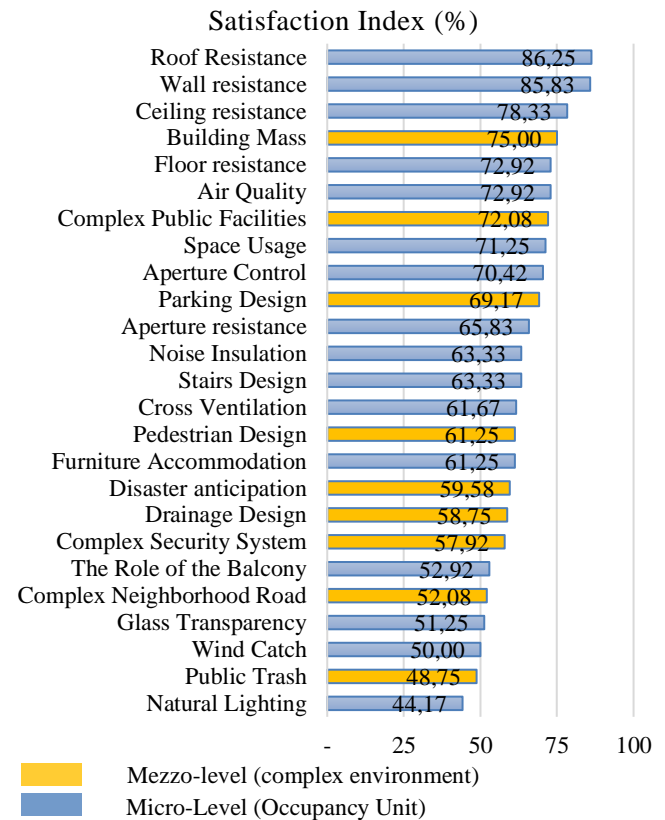


Figure 10. Satisfaction index with the performance of physical attributes of Metro Square Shophouse Complex.

Figure 10 show that at the highest level of satisfaction, namely very satisfied, four variables are at a percentage of 75.00% and above, namely the ease of finding the position of the shophouse when it is addressed, the level of resistance to the walls, the level of roof resistance, and the level of ceiling resistance.

Most of the variables of satisfaction with the performance of the shophouse complex are at a moderate level of satisfaction, which is fairly satisfied. This level of satisfaction is in the percentage of 50.01%-75.00%. The variables that meet include the level of space used in the shophouse, the level of furniture accommodation, the level of frequency of access to the balcony, the level of complaints/frequency of injury to the stairs, the level of ease of sweating in the room, the ease of controlling openings, health symptoms in the respiratory system, the level of noise in the room at night, the level of light intensity from the window, the level of ceramic resistance, the level of opening resistance, visitor parking capacity, pedestrian dimensions, clarity in fire evacuation, the level of rainwater puddles, traffic jams, accessibility of public facilities, and crime rates.

At the lowest level of satisfaction with the performance of the shophouse complex, which is fairly dissatisfied,

three variables are in the percentage of 25.01%-50.00%. Some of these variables are the perceived wind speed in the building, the condition without light during the day in the building, and the position of the placement of public trash facilities.

3.3. Variables That Significantly Affect Occupant Satisfaction

a. Individual Parameter Significance Test (T Statistical Test)

Decision-making basis:

- If the significance value is < 0.05, or t count > t table, then there is an effect of variable X on variable Y.
- If the significance value is > 0.05, or t count < t table, then there is no effect of variable X on Y.

T table formula: $t(\alpha/2 ; n-k-1)$ (2)
 T table= $t(0,025 ; 57)= 2,00247$.

Table 4. T Statistical test results

Coefficients ^a					
Model		Unstandardized Coefficients	Std. Error	Standardized	Sig.
				Coefficients	
1	(Constant)	-1.347	.343		.000
	Performance of the physical attributes of the shophouse unit (X1)	.039	.018	.358	.030
	Physical Attribute Performance of Residential Unit Supporting Facilities (X2)	.105	.032	.531	.002

a. Dependent Variable: RESIDENT SATISFACTION

- Testing H1; Table 4 shows that the significance value for the effect of X1 on Y is 0.030 < 0.05 and the value of t count is 2.227 > t table 2.00247, so it can be concluded that H1 is accepted which means there is an effect of X1 on Y.
- Testing H2; Table 4 shows that the significance value for the effect of X2 on Y is 0.002 < 0.05 and the value of t arithmetic is 3.301 > t table 2.00247, so it can be concluded that H2 is accepted which means there is an effect of X2 on Y.

b. Simultaneous Significance Test (F Test)

Decision-making basis:

- If the significance value is < 0.05, or F arithmetic > F table, then there is an effect of variable X on variable Y.
- If the significance value is > 0.05, or F count < F table, then there is no effect of the X variable on Y.

F table formula: $F(k ; n-k)$ (3)
 F table= $F(2 ; 58)= 3,16$.

Table 5. F Statistical test results

ANOVA ^a						
Model		Sum of Squares		Mean Square	F	Sig.
		Squares	df			
1	Regression	26.295	2	13.148	88.817	.000 ^b
	Residual	8.438	57	.148		
	Total	34.733	59			

a. Dependent Variable: RESIDENT SATISFACTION

b. Predictors: (Constant), Physical Attributes Performance of Residential Unit Supporting Facilities, Performance of Shophouse Unit Physical Attributes

- Testing H3; Table 5 shows that the significance value for the effect of X1 and X2 simultaneously on Y is 0.000 < 0.05 and the calculated F value is 88.817 > F table 3.16, so it can be concluded that H3 is accepted which means that there is an effect of X1 and X2 simultaneously significant to Y.

c. Coefficient of Determination Test (R Test)

Table 6. R Statistical test results

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.870 ^a	.757	.749	.385

a. Predictors: (Constant), Performance of Physical Attributes of Supporting Facilities for Residential Units, Performance of Physical Attributes of Shophouse Units

Based on the Table 6, it is known that the Adjusted R Square value is 0.749, this means that the ability of the independent variable in explaining the dependent variable is 74.9%, and the remaining 25.1% is explained by other variables not discussed in this study such as complex service performance. The quality of the social environment including relationships with neighbors, and other variables of the physical attributes of the shophouse complex that have not been explained.

From the percentage of occupant satisfaction with the performance variables of the shophouse complex above, there are reasons behind this percentage level. In the questionnaire that has been prepared, the author provides space for argumentation to the respondents so that the answer decisions from the respondents depart from the background and thorough analysis. The following is explained based on the level of the rating scale as shown in Table 7:

Table 7. Factors Affecting Satisfaction and Dissatisfaction.

Factors Affecting Satisfaction	Variable Groups
Initial Design Quality	1. Roof Resistance*,
	2. Ceiling Resistance,*
	3. Building Mass Planning,*
	4. Floor Resistance,
	5. Air Quality,
	6. Complex Public Facilities
	7. Aperture Control
	8. Parking Design,
	9. Noise Insulation,
	10. Stair Design,
	11. Cross Ventilation,
	12. Pedestrian Design,
	13. Furniture Accommodation,
	14. Disaster Prevention,
	15. Drainage Design,
	16. Complex Security System
	17. Balcony Role,

	18. Glass Transparency,
	19. Places General Garbage,
	20. Natural Lighting,
Structure and Construction	1. Roof Resistance,*
	2. Wall Resistance,*
	3. Ceiling Resistance,*
	4. Floor Resistance,
	5. Aperture Resistance
Resident Characteristics	1. Space Use,*
	2. Parking Design,*
	3. Cross Ventilation,*
	4. Pedestrian Design,
	5. Furnishing Accommodation,
Resident Adaptation	1. Building Mass,*
	2. Air Quality,*
	3. Space Use,*
	4. Parking Design,
	5. Stair Design,
	6. Cross Ventilation,
	7. Aperture Resistance,
	8. Pedestrian Design,
	9. Furnishings Accommodation,
	10. Disaster Anticipation,
	11. Complex Security Systems
	12. Role of Balconies,
	13. Complex Environment Roads,
External Factors	1. Aperture Resistance,*
	2. Noise Insulation,*
	3. Public Trash,*
	4. Complex Security Systems,
	5. Complex Environment Streets,

4. Conclusion

The satisfaction index of the overall physical attributes of the shop-house complex is 64.25%. In the interval scale, the value is at the level of fairly satisfied. The testing of the variables X1 and X2 on the Y variable, concludes that the two variables have a significant positive effect on the level of occupant satisfaction (Y). Hence, the increase in occupant satisfaction can be done by considering the physical attribute variables of the Shophouse Complex X1 (residential units) and X2 (supporting facilities for residential units). Sequentially, the factors that significantly affect occupant satisfaction and dissatisfaction can be viewed from the quality of the initial design, occupant adaptation, material quality, occupant characteristics, and external factors. Among those factors, we identify that the most significant performance attributes are roof resistance, ceiling resistance, building mass planning, wall resistance, space use, parking design, cross ventilation, air quality, aperture resistance, noise insulation, and public trash.

Based on the conclusion, we recommend the followings the quality of the initial design and the quality of materials are related to the physical of the shophouse complex so that they can be repaired directly. Repairs and performance improvements can be in the form of renovation or rejuvenation of the physical attributes of residential units and supporting facilities of residential units by considering complaints from residents. The characteristics of the occupants and the adaptation of the occupants are non-physical factors that cannot be changed directly, but require time and a gradual process. This factor is strongly influenced by the ability of the occupants the adjustment to and condition of the building they live in. Performance improvement can be done with requirements regarding the limit on the number of occupants and the type of business in the shophouse. Meanwhile, external

factors must involve wider stakeholders including government policies and public awareness and the area coverage covers most areas of Makassar City. Government policies determine the quality of the City environment such as City roads, City public facilities, and a good social environment. Meanwhile, public awareness by complying with regulations from the Government and upholding the ethics that have developed in the community.

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