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Influence of Human and Spatial Crowding on Consumer Satisfaction through Attractiveness as a Mediation Variable in Noodle Restaurant

Tiara Miladiyatul Kasana[1*], Budi Setiawan[1], Agustina Shinta[1], Mais Ilsan[2]

[1]Departement of Agribussines, Faculty of Agriculture, University of Brawijaya, Malang, Indonesia
[2]Departement of Agribussines, Faculty of Agriculture, University of Muslim Indonesia, Makassar, Indonesia
**Corresponding author : tiaramilakhasanah@gmail.com*

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ABSTRACT

The development of the culinary business, particularly in spicy noodle restaurant is increasing the popularity among the public. However, crowding in restaurant can directly influence consumer satisfaction. Therefore, this research aimed to (1) analyze influence of human and spatial crowding on consumer satisfaction and attractiveness, (2) assess the impact of attractiveness on consumer satisfaction, and (3) examine influence of human and spatial crowding on consumer satisfaction through attractiveness as a mediating variable. A quantitative research method was used, while the samples were determined using a judgment sampling technique, yielding a total of 100 respondents. Data were collected primarily using a closed questionnaire. Subsequently, data analysis was carried out using descriptive statistical and SEM-PLS analysis with the WarpPLS 8.0 analysis tool. The results showed that (1) human and spatial crowding had a positive and significant influence on consumer satisfaction and attractiveness, (2) attractiveness had a positive and significant influence on consumer satisfaction, and (3) human and spatial crowding had a positive and significant influence on consumer satisfaction through attractiveness as a mediating variable.

INTRODUCTION

Consumer satisfaction is an essential part of efforts aimed at maintaining restaurant business. The impact of satisfaction can be long-term when consumer have a positive perception (Quan et al., 2021). Business actors must provide the best for consumer, because satisfaction is important to build good general, satisfaction refers to a feeling of joy or disappointment resulting from a perception between expectations and actual experience Parastiwi & Farida, 2016). Therefore, conditions experienced by consumer while at restaurant determine whether the establishment can meet expectations. Some fast-food relationships (Tumpuan, 2020). In restaurants prioritize quality in services and products provided to consumer (Yulius, Wikumala, et al., 2023). Satisfied consumer are more likely to revisit restaurant and

recommend to others (Yulius, Adhitya, et al., 2023).

Consumer perception of restaurant is one of the important factors to consider, and the existence of crowding can be used as a result of subjective evaluations. An example of a spicy noodle restaurant with quite high crowds is Mie Gacoan, in Indonesia. This restaurant is quite popular among the public, as shown by the frequent crowds of people who visit as consumer. In most cases, consumer willingly queue to enjoy the food offered because Mie Gacoan is one of the most popular spicy noodle restaurant. Consequently, crowding is a common challenge due to the high number of consumer (Wang et al., 2021a).

One of the factors used by consumer in evaluating the popularity of restaurant is the level of crowd observed (Quan et al., 2021). The congestion that occurs certainly has an impact, potentially causing problems including inaccurate food orders, as well as crowded and noisy atmosphere for consumer. These problems can directly influence consumer satisfaction (Eroglu et al., 2022). The effort required to obtain food from restaurant during crowding discourages consumer from making purchases. Moreover, the quality of products and services will be negatively affected by an extremely high number of consumer (Tumpuan,2020). The congestion at Mie Gacoan noodle restaurant has increased the popularity, leading to a higher number of consumer. However, perception of crowding can vary among individuals, with differing impacts on the assessment of the experience. In different settings, crowding can have varying impacts (Naatu et al., 2022). For example, in the case of Mie Gacoan restaurant, crowding may have a positive effect, as it reflects an increase in visitors that has persisted over time. Spatial crowding or the physical environment influences consumer satisfaction, as outlined by Benaglia et al. (2023), which emphasized the importance of layout design in ensuring adequate distance between consumer. The physical environment significantly affects consumer satisfaction depending on the type of restaurant being operated, making the relationship between physical environment and consumer satisfaction complex. Crowding observed at the Mie Gacoan restaurant can continue for a long time and have a positive impact on the business.

The existence of crowding is considered to have a significant influence on consumer satisfaction. Therefore, this research aimed to investigate the relationship between consumer satisfaction with both human and spatial crowding, as well as the relationship between attractiveness and consumer contentment. Using attractiveness as variable mediator, the relationship between human and spatial crowding, as well as consumer satisfaction will be investigated.

METHODS

The location for this research was determined using the purposive area method. Purposive area is a method used to determine research locations

that are tailored to the objectives (Jayanti Mandasari et al., 2019). The location used was the Mie Gacoan restaurant, precisely in Malang City. This restaurant has quite a high level of crowds with many visitors daily. Malang City is among the student cities in Indonesia, hence, many consumer of Mie Gacoan restaurant are students. For the culinary business to grow rapidly, it must be busy and quite popular. However, a large population in one place causes crowding, thereby affecting the service of restaurant. This implied that crowding commonly observed at Mie Gacoan noodle restaurant can affect satisfaction and overall development. Assessing consumer satisfaction is crucial to analyzing factors affecting performance. This research was conducted over a period of 4 months starting from September to December 2023.

The samples were selected using a judgment sampling strategy in conjunction with a non-probability method. In the non-probability sampling strategy, not every individual of the population has an equal chance of being used as a sample (Septiani et al., 2020). The judgment sampling method was selected to collect information considered appropriate to the objectives or problems being researched (Imran, 2017). The samples were taken from the population who visited and ordered food at Mie Gacoan Restaurant. The respondents were determined using several criteria, including having visited Mie Gacoan restaurant in Malang City and consumed a product in the last 1 year at least 2 times. The minimum sampling size was determined by considering the minimum R2 value, of 0.10, 0.25, 0.50, or 0.75 and a significance level of 1%, 5%, or 10% with an assumed level of complexity. The calculation also considered the maximum number of arrows leading to a specific construct in a PLS route model. Therefore, the number of samples used was 100 based on a significance level of 10% with a minimum R2 value of 0.25 and a maximum construct of 3.

Data from 100 respondents were deemed representative of the large population with the object of research being Mie Gacoan restaurant. This research used 2 data analysis methods, namely descriptive statistical and the SEM-PLS. The descriptive statistical analysis method was used to explain the general characteristics of respondents and present the data from the analysis (Martias, 2021). Primary data were obtained by distributing questionnaires tabulated into a simple form. The purpose of descriptive analysis is to transform data into a form that is easier to understand (Ashari et al., 2017). The data collected were described using the descriptive method, which avoids making broad generalizations. Tables, graphs, and computations of data distribution, for determining minimum and maximum values as well as averages of variables, were used to support descriptive statistical analysis. SEM analysis is an analytical technique used to test relationships between complex variables to obtain a comprehensive picture of the model (Ghozali, 2014). This methodology can directly assess measurement errors in

addition to indicator and hidden variables. The Partial Least Square (PLS) methodology was then used as the SEM analysis technique. This analysis aims to determine linear relationships between variables. SEM-PLS method was used due to the efficiency and great potential to confirm theories that do not yet have a basis. It is alsoused in analyzing latent variables with various indicators (Solimun et al., 2017). The following are the equations used in SEM-PLS analysis:

a. Measurement Model (Relationship between latent variables and indicators)
   - Mediation Variable (Attractiveness)
   - Dependent Variable (Consumer satisfaction)

$$M = \lambda_1 X_1 + \lambda_2 X_2 + \delta \text{ .....(1)}$$

Information :

$$Z = \lambda_3 D + \lambda_4 X_1 + \lambda_5 X_2 + \delta \text{ .....(2)}$$

Information:

M : Mediation variable (Attractiveness)

X_1 : Human Crowding

X_2 : Spatial Crowding

Y : Consumer satisfaction

$\lambda_2, \lambda_2, \lambda_3$: Loading factor coefficients

δ : Measurement error

b. Structural Model (Causal relationship between latent variable)

$$\eta_Y = \beta_{MY}\eta_M + \gamma_{X1Y}\xi_{X1} + \gamma_{X2Y}\xi_{X2} + \zeta \text{ .....(3)}$$

η_Y = Endogenous latent variable (Consumer satisfaction)

η_M = Mediation latent variable (Attractiveness)

ξ_{X1}, ξ_{X2} = Exogenous latent variables (Human and Spatial Crowding)

β_{MY} = Coefficient of the relationship between Attractiveness and Consumer satisfaction

$\gamma_{X1Y}, \gamma_{X2Y}$ = Coefficients of the direct relationship from exogenous variables to the dependent variable

ζ = Structural error

The Sobel test analysis was used to test the effect of mediation variable in a causal model. This analysis is often used to measure the significance of the mediation effect. Based on the results obtained using SPSS, the mediation effect or z-score was calculated. When the z-score > 1.96, then the mediation/intervening effect is considered significant (Song & Zhang, 2018). The equations used to calculate the z-score are as follows:

$$ab = a_1 \times b_3 \quad (4.1)$$

$$S_{ab} = \sqrt{b_3^2 s_{a1}^2 + a_1^2 s_{b3}^2} \quad (4.2)$$

$$z = \frac{ab}{sab} \quad (4.3)$$

Information:

a_1 = the unstandardized coefficients B value for variable X1 (model 1)

a_2 = the unstandardized coefficients B value for variable X2 (model 1)

b_3 = the unstandardized coefficients B value for variable X1 (model 2)

Sa_1 = the unstandardized coefficients Std. Error for X1 (model 1)

Sa_2 = the unstandardized coefficients Std. Error for X2 (model 1)

Sb_3 = the unstandardized coefficients Std. Error for X1 (model 2)

RESULTS AND DISCUSSION

Results of Descriptive Statistical Analysis

The inclusion criteria for respondents include individuals who have visited Gacoan noodle locations in Malang City and consumed products in the last 1 year at least 2 times. These requirements were established to make sure that responders to the questionnaire were actual consumer aware of restaurant conditions. The respondents completed the questionnaire voluntarily and were grouped based on gender, age, domicile, occupation, income, and frequency of purchases over time. All variables have a minimum frequency value of 1 and a maximum value of 5, according to the data in Table 1. The minimum and maximum frequency values show the range of answers from respondents based on the questions or statements in the questionnaire. The score for each choice, starting from 1 to 5, represents the 5 choices that have been provided. The mean value shows the average of answers given by respondents to each item which can represent eachindicator variable. The highest mean value was in human

Table 1. Descriptive Statistical Analysis

	Min	Max	Mean	Std. Deviation
Human Crowding (X1)				
X1.1.1 (Very busy restaurant)	1	5	4.07	0.81
X1.1.2 (Queue to dine in)	1	5	3.74	0.72
X1.2.1 (Uncomfortable feeling)	1	5	3.60	0.78
X1.2.2 (The feeling of not minding)	1	5	3.68	0.87
Spatial Crowding (X2)				
X2.1.1 (Stuffy feeling)	1	5	3.51	0.80
X2.1.2 (Feeling hot)	1	5	3.41	0.77
X2.2 (Feeling difficulty moving)	1	5	3.55	0.76
Attractiveness (Y1)				
Y1.1 (Interested in food)	1	5	3.72	0.85
Y1.2 (Interested in atmosphere)	1	5	3.48	0.75
Y1.3.1 (Interested in services)	1	5	3.68	0.83
Y1.3.2 (Attracted by employee)	1	5	3.62	0.78
Consumer Satisfaction (Z1)				
Z1.1 (Feel satisfied with the price offered)	1	5	3.66	0.70
Z1.2.1 (Feel satisfied with the quality of food ingredients)	1	5	3.60	0.82
Z1.2.2 (Feel satisfied with the level of spiciness of food)	1	5	3.72	0.79
Z1.3 (Feel satisfied with service)	1	5	3.61	0.71

Source: Processed Primary Data (2023)

crowding variable at 4.07, falling in the high criteria according to the category in the statement (Solimun et al., 2017). The mean value is for the busy restaurant item. This shows that consumer who visit restaurant consider the number of people present, and the busier the place, the higher the number of other visitors. Apart from that, the popularity of restaurant among the public attracts the interest of many consumer.

Popularity helps restaurant in business development efforts by continuing to attract consumer (Manik, 2020). Crowds at restaurant are often influenced by positive reviews which tend to encourage more consumer, specifically teenagers. As members of Generation Z, the preferences for restaurant is often shaped by curiosity about consumer reviews, particularly those showcasing the good quality of the food and the service provided (Malini, 2021).

Variable with the lowest mean value of 3.41 was spatial crowding, included in the medium criteria. This shows that there is a feeling of stifling because the narrow space is considered to have little or no influence. Consumer ignore feelings of irritability when there is a crowd in restaurant. More attention is also given to other factors that can be considered distracting. Therefore, other factors are considered more influential than the sultry atmosphere in restaurant. The standard deviation value was further used to determine the size of the data distribution (Hidayat et al., 2019). When the standard deviation value obtained is greater than the average value, then the data has an outlier. The results showed that all standard deviation values for variables used had values below the average, indicating the absence of outlier data.

SEM-PLS (Partial Least Squares-Structural Equation Modeling) Analysis Results

1. Outer Model

a) Convergent Validity

Convergent validity is the initial test conducted during outer model testing. It is often used to evaluate the reliability and validity of variables used (Maurits et al., 2022). The correlation coefficient value between the indicator scores and the latent variables showed convergent validity value. Subsequently, factor loading value was used to measure the convergent validity test (Mazwan et al., 2023). Variable must have a value of > 0.7 to be considered valid, otherwise, it needs to be deleted (Indriyani et al., 2020).

Data in Table 2 show that all indicators in variables used have factor loading values > 0.7, suggesting data validity. Therefore, all variables used in this research were valid. In convergent validity testing, another important metric is AVE (Average Variance Extracted) value. When the value is ≥ 0.5, this means that the latent variable truly reflects the indicator variant used (Nanda, 2016). However, when the AVE value is ≤ 0.5 this implies the latent variable used cannot reflect the indicator. The AVE values obtained in this research are presented in Table 3.

Table 3 shows that every variable in this research had an AVE

Table 2. Convergent Validity Test Results

Indicator	Factor Loading	P-values
X1.1.1	0.777	<0.001
X1.1.2	0.810	<0.001
X1.2.1	0.789	<0.001
X1.2.2	0.802	<0.001
X2.1.1	0.904	<0.001
X2.1.2	0.843	<0.001
X2.2	0.878	<0.001
Y1.1	0.867	<0.001
Y1.2	0.860	<0.001
Y1.3.1	0.882	<0.001
Y1.3.2	0.844	<0.001
Z1.1	0.843	<0.001
Z1.2.1	0.874	<0.001
Z1.2.2	0.885	<0.001
Z1.3	0.847	<0.001

Source: Processed Primary Data (2023)

value > 0.5. This implied that all the latent variables accounted for more than half of the variance in the indicators used. Therefore, all indicators used were capable of accurately reflecting the hidden variables.

b) Discriminant Validity and Reliability

After conducting the convergent validity test, the next step was discriminant validity test results of the data used. The purpose of the discriminant validity test was to determine whether the constructs could adequately characterize the phenomenon under investigation (Indriyani et al., 2020). The loading and cross-loading factor values were compared to perform the discriminant validity test. This implies all indicators can pass the discriminant validity test when the loading value is higher than the value of the cross-loading factor. In addition, the comparison of the AVE root value with the correlation coefficient showed the discriminant validity test (Solimun et al., 2017a). When the AVE root value is more than the correlation coefficient

Table 3. Convergent Validity Test Results Based on AVE Values

Latent Variable	AVE Value
Human Crowding (X1)	0.631
Spatial Crowding (X2)	0.766
Attractiveness (Y1)	0.745
Consumer Satisfaction (Z1)	0.744

Source: Processed Primary Data (2023)

Table 4. Discriminant Validity Test Results

Indicator	X1	X2	Y1	Z1
X1.1.1	**(0.884)**	-0.179	0.370	-0.314
X1.1.2	**(0.886)**	0.242	0.012	-0.317
X1.2.1	**(0.766)**	0.305	-0.624	0.354
X1.2.2	**(0.644)**	-0.370	0.243	0.276
X2.1.1	0.141	**(0.917)**	-0.213	0.054
X2.1.2	-0.058	**(1.012)**	-0.067	-0.069
X2.2	-0.090	**(0.702)**	0.283	0.010
Y1.1	0.031	-0.050	**(0.881)**	0.000
Y1.2	-0.027	0.214	**(0.698)**	0.006
Y1.3.1	-0.122	-0.069	**(1.068)**	-0.027
Y1.3.2	0.123	-0.094	**(0.800)**	0.022
Z1.1	-0.153	0.075	-0.018	**(0.980)**
Z1.2.1	0.012	-0.099	-0.084	**(1.024)**
Z1.2.2	0.357	0.019	-0.003	**(0.560)**
Z1.3	-0.234	0.008	0.108	**(0.945)**

Source: Processed Primary Data (2023)

value of the other variables, this shows that the questionnaire satisfies the standards for discriminant validity. Table 4 shows the results obtained from the discriminant validity test.

Table 6 shows that each indicator overall pattern loading factor value was higher than cross-loading factor value for the latent variable. Therefore, it can be concluded that all currently available indicators adequately capture each of the latent variables included to pass the discriminant validity test. The results showed that Z1 against X2.1.1 has values of 0.054, and 0.213, with the highest value being 0.917. This implies that variable X2.1.1 indicator can accurately reflect the value of variable X2 particularly.

The reliability test was conducted by examining the Cronbach alpha and the composite reliability values. According to (Solimun et al., 2017a), the criteria for passing the test requires a composite reliability value of at least 0.70 and Cronbach's alpha value of > 0.6. The reliability testing results are shown in Table 5.

Table 5 shows that every variable used in this research passed the reliability test. This was showed by the composite dependability value, higher than 0.70. All variables had a value larger than 0.6 according to Cronbach's alpha value. Therefore, it can be concluded that all variables passed the reliability test.

2. Inner Model

Inner model test was conducted after testing the outside model. This test can be performed by examining the path coefficient, R-square, and Goodness of Fit value.

Table 5. Reliability Test Results

Latent Variable	Composite Reability	Alpha Cronbach
Human Crowding (X1)	0.873	0.805
Spatial Crowding (X2)	0.908	0.847
Attractiveness (Y1)	0.921	0.886
Consumer Satisfaction (Z1)	0.921	0.885

Source: Processed Primary Data (2023)

The specifications of the path coefficient values show the direction of the link between variables used. The path coefficient values were assessed in the first test of the inner model. A path coefficient value close to +1 shows the direction of the significant and positive relationship between variables. The closer the route coefficient value to zero, the weaker and less important the relationship between variables (Ayu et al., 2020). The results of path coefficient values in the structural model are shown in Figure 1.

Figure 1 shows that all variables in the structural model have path coefficient values with a neighborhood value of +1. The relationship between X1 and Z1, X2 with Z1, X1 with Y1, X2 with Y1, and Y1 with Z1 all showed positive direction. The positive path coefficient value between Y1 (beauty), and X1 (human crowding) shows that human crowding at Gacoan noodle restaurant contributes to the establishment appeal. The path coefficient value of human crowding variable on consumer pleasure was 0.25 with

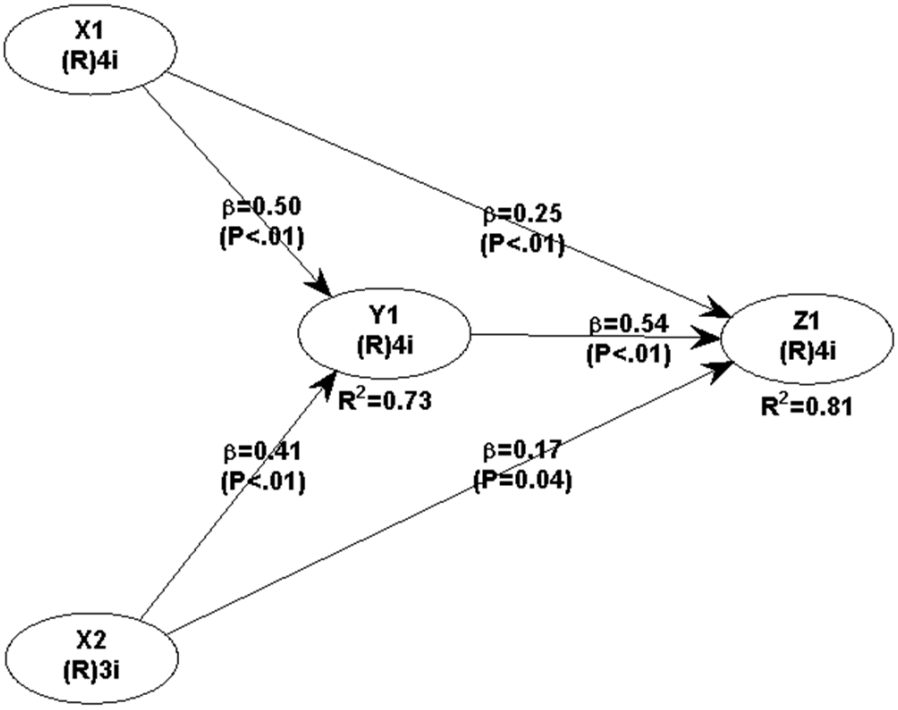

Figure 1. Path Coefficients Values in the Structural Model
Source: Processed Primary Data (2023)

a p-value of less than 0.01, close to +1. This suggests that human crowding variable has a large and positive 25% impact on consumer satisfaction variable.

The path coefficient value of spatial crowding variable on consumer satisfaction was close to +1, namely 0.17 with a p-value <0.01. This shows that consumer satisfaction variable is positively and significantly impacted by spatial crowding with a percentage of 17%. Human crowding variable path coefficient value on attractiveness was 0.50, or nearly +1, with a p-value of < 0.01. This shows that there is a 50% positive and substantial influence of human crowding on attractiveness. Spatial crowding variable on attractiveness has a path coefficient value of 0.41, which is near to +1, and has a p-value of less than 0.01. The result shows that attractiveness variable is positively and significantly impacted by spatial crowding variable at 41%. Additionally, attractiveness variable path coefficient value on consumer satisfaction was 0.54 with a p-value, close to +1. R-square, also known as the coefficient of determination value was further determined in the inner model test. According to Hasmalawati (2017), R-square value is used to calculate the degree to which the independent variable affects the dependent. Since R-square value ranges from 0 to 1, the accuracy will be lower when closer to 0.

On the other hand, when the R-square value is large, this suggests a greater accuracy (Hair et al., 2021). R-square value depends on the complexity of the research model, hence, there is difficulty in determining whether R-square is acceptable. According to (Hair et al., 2021), requirements start from 0.25, 0.50, and 0.70 for the latent variable that focuses on marketing. The R-square values obtained in this research are shown in Table 6.

The R-square value for attractiveness was 0.726 suggesting that human and spatial crowding in restaurant have a 72.6% influence on appeal, while additional variables outside the research model account for the remaining 27.4%. Furthermore, the R-square value for consumer satisfaction was 0.812, showing that consumer satisfaction accounts for 81.2% of the effect, while other external variables explain the remaining 18.8%.

The final step in the inner model test was to determine the Goodness of Fit value. Ten indicators pertaining to the relationship between variables and the underlying assumptions make up the Goodness of Fit value, which is a value index (Solimun et al., 2017a). The results of Goodness of Fit obtained are presented

Table 6. R-squares analysis results

Response Variable	R-square Value
Attractiveness (Y1)	0.726
Consumer Satisfaction (Z1)	0.812

Source: Processed Primary Data (2023)

Table 7. Results of Goodness of Fit Indices

Model Fit and Quality Indices	Fit Criteria	Result	Information
Average Path Coefficient (APC)	p < 0.05	0.374 p < 0.001	Fulfilled
Average R-Squared (ARS)	p < 0.05	0.769 p < 0.001	Fulfilled
Average Adjusted R-Squared (AARS)	p < 0.05	0.763 p < 0.001	Fulfilled
Average Block VIF (AVIF)	Fulfilled if ≤ 5. ideal ≤ 3.3	2.910	Fulfilled
Average Full Collinearity VIF (AFVIF)	Fulfilled if ≤ 5, ideal ≤ 3.3	4.118	Fulfilled
Tenenhaus GoF (TGoF)	Small ≥ 0.1, Med ≥ 0.25, Big ≥ 0.36	0.745	Big
Sympson's Paradox Ratio (SPR)	Fulfilled if ≥ 0.7, ideal = 1	1.000	Ideal
R-Squared Contribution Ratio (RSCR)	Fulfilled if ≥ 0.9, ideal = 1	1.000	Ideal
Statistical Suppression Ratio (SSR)	Fulfilled if ≥ 0.7	1.000	Fulfilled
Nonlinear Bivariate Causality Direction Ratio (NLBCDR)	Fulfilled if ≥ 0.7	1.000	Fulfilled

Source: Processed Primary Data (2023)

in Table 7.The results in Table 7 show that the research model can satisfy every Goodness of Fit indicator. One indicator is Average R-squares (ARS), with a value of 0.769. This value is often used to view the average of exogenous constructs which can explain the endogenous (Kock, 2014).

Therefore, it can be concluded that variables in the model account for 76.9% of the effect, with the remaining 23.1% being explained by factors not included. The Average Path Coefficients (APC) and Average Adjusted R-squared (AARS) indicators had a p-value of < 0.001. Therefore, it can be concluded that the two indicators satisfy the current requirements (Solimun et al., 2017).

The Average Block VIF (AVIF) indicator is used to determine the collinearity of variable (Solimun et al., 2017). The model AVIF value was 2.910, which is deemed acceptable as it is less than 5 and excellent when less than or equal to 3. Furthermore, the Average Full Colinearity VIF (AFVIF) produced a score of 4.118, which is still considered acceptable since it is less than 5. The average outcome of complete collinearity testing pertaining to either lateral or vertical multicollinearity is known as the AFVIF indicator (Kock, 2014).

Therefore, the value of AFVIF is still accepted because it is below 5, suggesting no multicollinearity. This implies that there is no perfect linear relationship with all the independent variables (Susanti & Saumi, 2022). The next indicator is Tenenhaus GoF (TGoF). AFVIF shows the predictive power of the structural model explanation (Faizah et al., 2023). The TGoF indicator value in the analysis results was 0.745, included in the large category. The results show that the inner model has the power to explain the structural

model broadly. The next indicator examined was Sympson Paradox Ratio (SPR). When the indicator has a value of 1, this suggests the research is free from Simpson paradox. Therefore, this indicator is to find out whether the research model used is free from Simpson paradox (Puspitasari et al., 2019). The value of the SPR indicator also shows that there are no conflicting analysis results. The R-squared Contribution Ratio (RSCR) shows the degree to which the R-squared contribution is negative (Puspitasari et al., 2019). Data from the analysis results showed that the value of the RSCR indicator was 1,000. Since the structural model has a 100% positive R-squared contribution, this implies that there is no negative R-squared contribution. The next indicator is the Statistical Suppression Ratio (SSR) used to show whether or not instantaneous statistical suppression is present in the structural model (Solimun et al., 2017). The SSR indicator has a value of 1,000, according to the analysis result. Since the figure meets the criteria by being greater than or equal to 7, it is considered acceptable. The last indicator examined was the Nonlinear Bivariate Causality Direction Ratio (NLBCDR). This indicator quantifies the extent to which the model predicted direction of the causal relationship supported by the coefficient of association between two non-linear variables (Puspitasari et al., 2019). The data analysis showed that the NLBCDR indicator value was 1,000. Given the value obtained is greater than or equal to 0.7, it may be concluded that the model supports the direction of causation.

Hypothesis test

One way to determine how one variable connects to other factors is to test hypotheses. The t-test rules are examined in WarpPLS analysis as a means of conducting hypothesis testing. When the alpha value is 5% and the P-value is less than 0.05, the hypothesis can be accepted. The hypothesis testing results obtained in this research are shown in Table 8.

Based on the results of hypothesis testing, operational hypothesis testing can be explained clearly as follows:

1. Hypothesis 1

H0 : Human crowding has no influence on consumer satisfaction

H1 : Human crowding has a influence on consumer satisfaction

The p-value for the first hypothesis was 0.005, and the coefficient value was 0.249, according to the results. The results show that there is statistical significance and a positive coefficient value when the p-value is less than 0.05. With H0 being accepted and H1 being rejected, it can be concluded that there is a positive correlation between human crowding and consumer satisfaction. Consequently, a rise in consumer satisfaction at restaurant will cause an increase in crowding.

2. Hypothesis 2

H0 : Spatial crowding has no influence on consumer satisfaction

H2 : Human crowding has a influence on consumer satisfaction

The p-value for the second hypothesis was 0.038, and the coefficient value was 0.171, according

Table 8. Hypothesis Testing Results

Hyphotesis	Coefficient	P-value	Result
H1: Human crowding has a negative effect on consumer satisfaction at the noodle restaurant in Malang City	0.249	<0.001	Rejected
H2: Spatial crowding has a negative effect on consumer satisfaction at the noodle restaurant in Malang City	0.171	0.038	Rejected
H3: Human crowding has a negative effect on attractiveness in the noodle restaurant in Malang City	0.502	<0.001	Rejected
H4: Spatial crowding has a negative effect on attractiveness from the noodle restaurant in Malang City	0.410	<0.001	Rejected
H5: Attractiveness has a positive effect on consumer satisfaction from the noodle restaurant in Malang City	0.540	<0.001	Accepted
H6: Human crowding has a positive effect on consumer satisfaction through attractiveness as a mediating variable from the noodle restaurant in Malang City	0.271	<0.001	Accepted
H7: Spatial crowding has a positive effect on consumer satisfaction through attractiveness as a mediating variable from the noodle restaurant in Malang City	0.221	<0.001	Accepted

Source: Processed Primary Data (2023)

to the results. The results show that there is statistical significance and a positive coefficient value with a p-value less than 0.05. With H0 being accepted and H2 being rejected, it can be concluded that there is a positive correlation between spatial crowding and consumer satisfaction. Consequently, a rise in spatial crowding at restaurant will cause an increase in consumer satisfaction.

3. Hypothesis 3

H0 : Human crowding has no influence on attractiveness

H3 : Human crowding has influence on attractiveness

The p-value for the third hypothesis was less than 0.001, and the coefficient value was 0.502, according to the results. There is statistical significance and a positive coefficient value when the p-value was < 0.05. With H0 being accepted and H3 being rejected, it may be concluded that there is a positive correlation between human crowding and attractiveness. Consequently, a rise in crowds at restaurant will cause an increase in attractiveness.

4. Hypothesis 4

H0 : Spatial crowding has no influence on attractiveness

H4 : Spatial crowding has a significant influence on attractiveness

The p-value for the third hypothesis was less than 0.001, and the coefficient value was 0.410, according to the results. The results show that there is statistical significance and a positive coefficient

value. With H0 being accepted and H4 being rejected, it may be concluded that there is a positive correlation between spatial crowding and attractiveness. Consequently, a rise in spatial crowding at restaurant will cause an increase in attractiveness.

5. Hypothesis 5

H0 : Attractiveness has no influence on consumer satisfaction

H5 : Aattractiveness has a influence on consumer satisfaction

The fifth hypothesis has a p-value of less than 0.001 and a coefficient value of 0.540, according to the analysis results. The results show that there is statistical significance and a positive coefficient value. With H0 being rejected and H5 being accepted, it can be concluded that there is a positive correlation between attractiveness and consumer satisfaction. Consequently, an improvement in restaurant attractiveness will cause a rise in consumer satisfaction.

6. Hypothesis 6

H0 : Human distress has no influence on consumer satisfaction through attractiveness as a mediating variable

H6 : Human crowding influences consumer satisfaction through attractiveness as a mediating variable

The hypothesis testing showed that the sixth hypothesis had a p-value of less than 0.001 and a coefficient value of 0.271. The results show that there is statistical significance and a positive coefficient value when the p-value is less than 0.05. This implies that human crowding indirectly affects consumer satisfaction through attractiveness, with H0 being rejected and H6 being accepted. Attractiveness variable can operate as a mediator between consumer satisfaction and human crowding.

7. Hypothesis 7

H0 : Spatial crowding has a negative influence on consumer satisfaction through attractiveness as a mediating variable

H7 : Spatial crowding has a positive influence on consumer satisfaction through attractiveness as a mediating variable

The hypothesis testing results showed that the seventh hypothesis had a p-value of less than 0.001 and a coefficient value of 0.221. The results show that there is statistical significance and a positive coefficient value when the p-value is less than 0.05. Therefore, spatial crowding indirectly affects consumer satisfaction through attractiveness, with H0 being rejected and H7 being accepted. Attractiveness variable can operate as a mediator between consumer satisfaction and spatial crowding.

Sobel Test Analysis Results

Path analysis was carried out by using multiple linear regression to measure causal relationships between predetermined variables and also referred to as a causal model. The results of the multiple linear regression analysis performed using SPSS version 19.0 show the effects of independent variables on dependent, as presented below:

Table 9. Partial Regression Analysis Results (Model 1)

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.412	.916		.450	.654
	X1	.532	.086	.486	6.169	.000
	X2	.579	.107	.426	5.402	.000

a. Dependent Variable: Y

Source: Processed Primary Data (2023)

Multiple Linear Regression Analysis Model 1

Based on the analysis, the partial regression results between human crowding (X1) and spatial crowding (X2) on attractiveness (Y) are as follows Table 9. As shown in Table 9, the significance values for human crowding (X1) and spatial crowding (X2) are both 0.000, which is less than 0.05. This shows that there is a positive effect of human crowding (X1) and spatial crowding (X2) on attractiveness (Y).

Multiple Linear Regression Analysis Model 2

Based on the analysis, the partial regression results for influence of human crowding (X1), spatial crowding (X2), and attractiveness (Y) on consumer satisfaction (Z) are as follows Table 10 .

Table 10 shows that the significance values for human crowding (X1) and attractiveness (Y) are 0.000 < 0.05, indicating a positive effect of human crowding (X1) and attractiveness (Y) on consumer satisfaction (Z). Meanwhile, the significance value for spatial crowding (X2) is 0.061 > 0.05, suggesting a negative influence of spatial crowding (X2) on consumer satisfaction (Z).

Path 1. X1 → Y → Z

$$ab = a_1 \times b_3 \quad (4.1)$$

$$= 0{,}532 \times 0{,}330 = 0{,}175$$

$$S_{ab} = \sqrt{b_3^2 s_{a1}^2 + a_1^2 s_{b3}^2} \quad (4.2)$$

$$= \sqrt{(0.330)^2(0.086)^2 + (0.532)^2(0.080)^2}$$

$$= \sqrt{0.002616778}$$

$$= 0.051$$

$$z = \frac{ab}{sab} = \frac{0.175}{0.051} = 3.43 \quad (4.3)$$

Based on the results, the calculated z-value is 3.43, which means

Table 10. Partial Regression Analysis Results (Model 2)

Coefficients[a]						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	.858	.721		1.190	.237
	X1	.330	.080	.320	4.125	.000
	X2	.182	.096	.142	1.893	.061
	Y	.472	.080	.501	5.912	.000

a. Dependent Variable: Z

Source: Processed Primary Data (2023)

3.43 > 1.96. This implies that attractiveness variable can mediate the effect between human crowding and consumer satisfaction.

Path 2. X2 → Y → Z

ab = a_2 x b_3 (4.1)

=0,579 x 0,330 = 0,191

$$S_{ab} = \sqrt{b_3^2 s_{a1}^2 + a_1^2 s_{b3}^2} \quad (4.2)$$

$$= \sqrt{(0.330)^2(0.107)^2 + (0.579)^2(0.080)^2}$$

$$= \sqrt{0.0033923385}$$

$$= 0.058$$

$$z = \frac{ab}{sab} = \frac{0.191}{0.058} = 3.29 \quad (4.3)$$

Based on the results, the calculated z-value is 3.29, which means 3.29 > 1.96. This implies that attractiveness variable can mediate the effect between spatial crowding variable and consumer satisfaction.

CONCLUSION AND SUGGESTION

Based on the results, human crowding has a significant effect on consumer satisfaction at Mie Gacoan noodle restarant in Malang City. This effect arises as the volume of patrons and the length of the queue positively impact consumer perception of value received, the quality of the food, and the level of service received from the establishment. Furthermore, there was a significant correlation between spatial crowding and consumer satisfaction. When consumer are satisfied with the amount paid, the caliber of the cuisine given, and service rendered by restaurant., the level of satisfaction will increase. Meanwhile, sentiments of interest in the cuisine given, restaurant atmosphere, and the service rendered are positively impacted by the huge number of patrons and long queues.

Aesthetics has a favorable and substantial impact on consumer satisfaction. This is because perceptions of restaurant interest in the services offered and the friendliness of the staff all have a favorable impact on satisfaction with the cost, the caliber of the food served, and the overall level of service received. Attractiveness was also identified as a mediating variable while human crowding had a positive and significant impact on consumer satisfaction. With attractiveness acting as a mediating variable, spatial crowding subsequently had a favorable and considerable impact on consumer satisfaction. Based on the Sobel test analysis, the calculated z-score for all variables was greater than 1.96. This implied that attractiveness variable could mediate the effect of human and spatial crowding variables on consumer satisfaction.

Several suggestions can be drawn from this research based on the results obtained. Specifically, Mie Gacoan noodle restaurant is expected to add additional ordering and payment counters to reduce consumer queues. This can also improve the service provided in terms of the waiting time required.

Restaurant also need to widen the space in line with the average number of visitors to reduce crowding. This widening must also be balanced with a contemporary design to attract consumer. Moreover, variables tested influenced consumer satisfaction both directly and indirectly. Future

research should add other variables that might influence consumer satisfaction. Human and spatial crowding also had a significant on consumer satisfaction through attractiveness as a mediating variable.

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