Patient's Perception of Waiting Time in the Outpatient Unit at the Kendari Regional Public Hospital

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Abstract—This study aimed to analyze psychological effect of waiting environment on perceptions of waiting time for outpatients in Kendari Regional Public Hospital. Respondents participitated in this study were 384 patients, taken during study period between September-December 2019. Data analysis employed Partial Least Square Method and analyzed on SmartPLS 3 application. The results revealed that, there is a positive and siginificant effect between queuing environment on perception of waiting time in outpatient care in Kendari Regional Public Hospital with regression coefficient of 0.217 (positive) and t-value of 2.463> 1.96. Environmental elements regarding enjoyable management of queue services were found to positively influence the affective state of individuals which consisted of interactions of pleasure and passion during the period of waiting for service. A short waiting time perception can compensate for the long actual waiting time and and can take on the role of as service recovery.

Index Terms— Perception of Waiting Time, Waiting Environment, Psychology of Waiting

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1 INTRODUCTION

Factors that are significantly related to satisfaction measures from health service planning, one of which is service waiting time[1]. To improve the quality of health services, reduce patient waiting time be one of effort in obtaining health services [2],[3]. Duration of waiting time in the queue, is a driving factor that has a very significant influence on patient satisfaction [4],[5]. When patient waiting times are longer than expected, patient satisfaction decreases [4],[6].

Waiting time management comprises of two main components. First, ensuring that the appropriate capacity has been built into the service facility, to minimize the number of customers who are waiting, can arrive at the anticipated level. Second, ensuring that the needs and psychological expectations of customers who are waiting are met while they are waiting [7], thus when a manager manages the management of waiting times when customers queue up, they are not only able to choose the right queue model and analysis based on service capacity, but also pay attention to the psychological aspects of customers who are waiting to meet their expectations, hence they do not feel long waiting times, which will occur positive perception of waiting time. Because capacity design can also affect perceptions of service quality.

Patients as customer, perceived the waiting time through their perspective, especially regardless of the reality. Customers have a mental time that tells them when to wait too long and when is the right time to manage it very well. Managing perception is as effective as managing actual waiting time techniques, and if the organization is very good at managing perception of waiting time, even waiting for a very long time can be accepted and tolerated for customers [7].

Norman [8] stated that one of the service institutions which is the worst offender in paying attention to aspects of the experience of waiting in a queue is a hospital. Patients and families who are waiting in anxious condition, will often be presented with a gloomy waiting environment, and add to the negative anxiety, moreover it can be exacerbated with a lack of

information about waiting time, thus stimulating all levels of negative emotion to appear. Hospitals can provide a number of waiting situations in the waiting environment that most trigger anxiety, namely in an uncomfortable environment, potentially bad results, and often due to lack of information, triggering negative emotions in patients.

Eric Bellman in his article published in the Wall Street Journal said that, patient waiting times are relatively long in Indonesia, when compared to Singapore, where patients make appointments and meetings begin on time [9]. Long waiting time is a problem of decreasing patient satisfaction with the services provided by health service institutions, and reflects how the hospital manages service components that are adjusted to the patient's situation and expectations.

The most common problem found in hospital services related to the queue, is that the hospital is compared to other places with queues, that is, hospitals spend less time, effort, and costs that pay attention to the patient's condition when waiting, the patient's emotional state and for relatives and friends of patients who joined in line.

Furthermore, problems in managing queues at the hospital also raised, where the greatest attention from the service aspect is more concentrated on service delivery, as long as the patient has been provided services, other aspects are not prioritized, including the management of waiting psychology, hence if this can be managed well, will affect the value of customer satisfaction. On the other hand, the concentration of hospital management in arranging queues is still less serious, marked by the many phenomena of queue buildup of patients in hospital service units, especially outpatients unit in the General Public Hospital of Kendari.

As per the context of services such as hospitals, the general function of hospitals is to provide quality and affordable health services to the community in order to improve the degree of public health, so that patients as customer can choose the services, to be utilized through consideration of the service

and the underlying economy. Hospitals as a public sector can increase effectiveness and quality, by providing opportunities for patients to choose quality health service providers [10], so that self-correction mechanisms arise for service improvement, like the market competitive [11],[12].

The importance of providing empirical data related to the perception of patient waiting time can add references to the psychology of waiting, especially for improving hospital service in managing queues for managers, in order to increase hospital marketing value.

The objective of this present study was to analyze the affect of the queuing environment on perceptions of waiting time for outpatients in Kendari Regional Public Hospital.

2 LITERATURE REVIEW

Understanding patient satisfaction related to waiting time can be seen from an objective and psychological standpoint such as perception of waiting [7]. is more important than reality. This is why having one line of queues with several servers, is always considered more equitable than several lines of queues, with each one person serving [13].

Waiting for an unknown duration seems longer than waiting for a known duration. This is related, in part, to customer anxiety by waiting. When the actual wait cannot be determined, updates or status reports at predetermined intervals can be an acceptable substitute [14]. When a patient does not know what is holding up the queue or causing a delay, the wait becomes noticeably longer. Effective managers try to keep customers waiting to get information, or provide visual cues that explain the situation while waiting [7].

Management can improve the queuing environment to reduce negative customer perceptions about waiting times. Service companies can reduce perceived waiting times, by giving customers more certainty about their waiting time, giving special reasons to wait, entertaining waiting customers, reducing customer anxiety and providing queuing activities for customers to keep them in the queue. Specific steps to improve the queuing environment, include diverting customer attention by offering information such as electronic bulletin boards, films, music and news paper [15].

Gilligan [16] reported that the desire of patients to revisit health services decreases with increasing perceived of waiting time. Patients want to improve queuing environments such as increasing privacy, quiet and clean environment, snack shops and others in the waiting area [17].

Liang [15] found that essentially a company must improve the environment / atmosphere of waiting, so that customers can experience a shorter waiting time. Efforts to improve the queuing environment so that it is more conducive, is pivotal to positively affect customers perception of waiting times. Improve the waiting environment, is defined as the treatment of the waiting environment to distract the customer while waiting for the queue.

Patients who are in an attractive waiting room such as a comfortable room temperature, good furniture and a comfortable waiting atmosphere can feel shorter waiting times [18], even by adding artificial ornaments such as plastic flowers,

can increase the comfort of waiting [19].

The literature on waiting time shows that, individuals pay less attention to the waiting process if other stimuli distract them [20]. By improving the waiting environment, can indirectly reduce the waiting time perceived by someone. Someone who enjoys a queuing environment experiences, a shorter perceived of waiting time. And, if the service provider is able to provide information about the expected service time the customer is waiting for, so that the customer will feel a lack of unpleasant experience while waiting [15].

As per the aforementioned literature description, it can be hypothesize the following : waiting environment is likely have a positive and significant effect to perception of waiting time in outpatients at Kendari Regional Public Hospital.

3 RESEARCH METHODS

This study was an explanatory research with Survey approach method. Explanatory Research design conducted because this study used a questionnaire as an instrument in collecting data, analyzing data quantitatively / statistically and testing hypotheses to see the association between variables. The study was designed to analyze the affect of waiting environment on the perception of waiting time in outpatients at the Kendari Regional Public Hospital.

Respondents were patients of Non Critical Outpatients at the Kendari Hospital who visited for treatment during the study period between September-December 2019, whose number was unknown (infinite), so as to calculate the minimum number of samples needed, using the Lemeshow formula for the unknown population as follows:

$$n = \frac{Z^2 \times P(1-P)}{d^2}$$

n = sample size
z = Z score at confidence level of 95 % = 1,96
P = maximal estimation = 0,5
d = alpha (0,05) or sampling error = 5 %

The required sample size by using a confidence level of 95% and an error rate of 5%, then the adequacy of the data as respondents in this study was 384 respondents. Respondents were selected through consecutive sampling in which patients were met during the study period directly, using inclusion criteria as follows : Patients who had felt the waiting time during queueu at Kendari Regional Public Hospital, both during the study and at previous visits, and had never interviewed beforehand, and using exclusion criteria as follows : Patients who did not have a queue as like special care patients, patients on the previous day who were transferred the day of service, and patients who had been interviewed earlier during the study period.

The questionnaire used had been developed previously, based on a combination of theoretical frameworks for research variables and modification of the research questionnaire beforehand with the discussion of waiting time perceptions and waiting environments to improve the validity of instument, and test trials through a pilot test to the respondent (n = 30) to

evaluated the psychometric properties of the instrument and employed Exploratory Factor Analysis (EFA), where the questionnaire used has shown good convergence and discriminant validity, and all constructs used have high reliability for used in observing waiting environment and perception of waiting time as variables.

This present study employed the Partial Least Square, so that the variables included are latent variables with indicators. Endogenous latent variables are perceptions of waiting time with formative indicators as follows : perceived uncertainty, focused attention to waiting, enjoyment and time distortion felt. Exogenous latent variable is a queuing environment with indicators that are reflective as follows : provision of information about service times and provision of facilities for distraction.

The Partial Least Square (PLS) analized by SmartPLS 3 apps, is used to test hypotheses and assess the validity of indicators. In this study, we conducted content validity and construct validity. First-order construct and reliability validity were evaluated using Alpha Cronbach using SPSS software. Whereas the second-order construct validity, was tested by Confirmatory Factor Analysis (CFA) using PLS software for outer model. Then, the PLS bootstrap technique was used to test the research hypothesis.

4 RESULT AND DISCUSSION

4.1 Testing the Validity of the Measurement Model (Outer Model)

A concept and research model in order to be tested in a predictive model of relational and causal relationships, must meet the purification stage in the measurement model. The measurement model itself, is used to test the instrument's and indicator's validity and reliability. Outer model or measurement model, is an assessment of the validity and reliability of research variables. There are three criteria to assess the outer model with reflexive indicators in this study, as follows : convergent validity, discriminant validity, and composite reliability.

Rule of thumb which is commonly used as a validity test parameter in PLS, for convergent validity tests using loading factor parameters > 0.7, average variance extracted (AVE)> 0.50 and communality> 0.50. As for the discriminant validity test, the root AVE is greater than the correlation of latent variables, and cross loading> 0.70 in one variable. Evaluation of the measurement model of latent variables with reflexive indicators, was analyzed by looking at the convergent validity of each indicator. Testing convergent validity on PLS can be seen from the amount of outer loading of each indicator, against its latent variable. Outer loading higher than 0.70 is highly recommended, however loading factor values 0.50-0.60 are still tolerated [21].

Reliability test to determine the reliability of a construct was based on several criteria including Cronbach's alpha reliability coefficient, composite reliability coefficient, and extracted variance proportion. The rule of thumb for reliable construct is when a Cronbach alpha coefficient> 0.60, a composite reliability coefficient> 0.70, and an extracted variance proportion> 0.50.

4.1.1 Convergent Validity

TABLE 1

THE RESULT OF LOADING FACTOR ESTIMATION

Construct	Indicator		Loading Factor	t-*value*
Waiting environment	Information about Service Time	$X_{2.1}$	0.891	76.262
	Provision of Facilities to Distract Attention	$X_{2.2}$	0.794	30.953
Perception of Waiting Time	Perceived Uncertainty	$Y_{1.1}$	-	-
	Attention Focus on Waiting	$Y_{1.2}$	-	-
	Perceived Enjoyment	$Y_{1.1}$	-	-
	Perceived Time Distortion	$Y_{1.2}$	-	-

Note: Unfilled loading tables are Formative indicators

Table 1 shows the observed indicators or variables in this research construct, had a loading factor > 0.70, thus there was no need to eliminate indicators, and significant at the alpha significance level = 5% (t-value> 1.95) .

TABLE 2

THE RESULT OF AVERAGE VARIANCE EXTRACTED (AVE) ESTIMATION

Construct	AVE	Communality	Conclusion
Waiting environment	0.713	0.713	Valid
Perception of Waiting Time	-	-	-

Note: Unfilled loading tables are Formative indicators

Table 2 shows that the results of Average Variance Extracted (AVE) and Communality are valid because they had a value > 0.50, so that the convergent validity is also satisfied.

4.1.2 Discriminant Validity

TABLE 3

CROSS-LOADING MATRIX

Indicator		Waiting environment	Perception of Waiting Time
1		**2**	**3**
Information about Service Time	$X_{1.1}$	**0.891**	-

Provision of Facilities to distract Attention	$X_{1.2}$	**0.794**	-
Perceived Uncertainty	$Y_{1.1}$	-	-
Attention Focus on Waiting	$Y_{1.2}$	-	-
Perceived Enjoyment	$Y_{1.3}$	-	-
Perceived Time Distortion	$Y_{1.4}$	-	-

Note: Unfilled loading tables are Formative indicators

Table 3, describes that the value of the cross loading matrix indicator of the Waiting environment variable is> 0.70, indicating that discriminant validity has been satisfied.

4.1.3 Composite Reliability

TABLE 4

THE RESULT OF COMPOSITE RELIABILITY ESTIMATION

Construct	Cronbachs Alpha	Composite Reliability	Conclusion
Waiting environment	0.604	0.832	Reliable
Perception of Waiting Time	-	-	-

Note: Unfilled loading tables are Formative indicators

Table 4 shows that the reliability estimation results indicated good results because the composite reliability value of the Cronbachs alpha construct value of the queuing environment variable is 0.604, however it is still above the tolerable threshold of > 0.5, yet is still strengthened by the composite reliability value of 0.832 > 0.70. Thus the construct is truly reliable, which means that the measurement model has been satisfied.

4.1.4 Formative Construct Test

Formative constructs can be measured using two methods as follows : reliability indicators with a minimum required value of 0.2 and colinearity indicators with a VIF score of less than 10.

TABLE 5

THE RESULT OF RELIABILITY INDICATOR AND COLINEARITY INDICATOR TEST

Indicator/Variable	Perception of Waiting Time	
	Outer Weight	*VIF*
$Y_{1.1}$	0.175	1.779
$Y_{1.2}$	0.252	1.640
$Y_{1.3}$	0.723	1.288
$Y_{1.4}$	0.183	1.198

Table 5 shows two of the four indicators of risk perception variables have met the reliability indicator. The first indicators (Y1.1) and fourth (Y1.4) of the perception of waiting time variables did not meet the criteria because they were only

0.175 and 0.183. The score or value is different from the minimum score specified, which is minimal 0.2. Although indicator Y1.4 had a value of less than 0.2, the underlying theory is very strong. If formative indicators are considered logical enough to form a construct, supported by a strong theoretical foundation, then these indicators may be retained. In this study, indicators of perceived waiting time have been used in previous studies by lee, et al [20]. Therefore, the theory underlying these indicators is quite strong. Furthermore, if an indicator or variable is said to be invalid or unreliable in one test, while the indicator or variable is valid or independent in another test, then the indicator or variable can still be maintained in the model.

Regarding the colinearity indicator measurement technique, the waiting time perception variable had a value of less than 10. Even though the rule of thumb cannot be more than 10, in reality the number 5-10 on VIF can be stated that there is multicollinearity on the indicator variable [22]. However, the results of VIF in Table 5 elucidate that, these indicators are in a safe score. In other words, there is no multicollinearity between the indicators that contribute to the waiting time perception variables. As per the formative construct test, the perception of waiting time is valid and reliable.

4.2 Hypothesis Test

TABLE 6

THE RESULT OF DIRECT AFFECT TEST

Association between Variables		Path coefficient	t-statistic	SE	P-Value	Result
Exogenous	Endogenous					
WE ->	PWT	0.213	2.321	0.092	0.021	Significant

The results of the hypothesis test shows waiting environment affect on the perception of waiting time in Table 6 obtained a regression coefficient of 0.217 (positive) and a value of t (t-value) of 2.463. Because t-value> 1.96 is significant at the 5% significance level, this means that waiting environment has a positive and significant effect on the perception of waiting time. Thus, by improving waiting environment, the shorter waiting time perception, where the waiting environment that is able to divert the patient's attention while waiting for service, can improve the perception of waiting time to feel shorter and enjoyable, which means a conducive waiting environment can make the waiting feel short .

From the results of the hypothesis test, it is known that the positive effect between waiting environment on the perception of waiting time for outpatients at the Kendari General Public Hospital, which can be interpreted by improving the quality of the waiting environment, such as by improve the queue atmosphere of patients, is directly proportional to the increase in the perception

of waiting time for patients to get better or feel short and enjoyable.

Several efforts made in improving the quality of waiting time in this present study, can use research indicators from the waiting environment, by maximizing the provision of information about service time such as the use of queue tickets, monitor screens to display the queue position or convey directly to the patient about the long waits that must be faced by the patient. The following indicators that can be maximized in improving the quality of the waiting environment are paying attention to the provision of facilities to divert attention, such as providing reading materials, internet access, a seating layout that allows patients to communicate with one another, entertainment, snacks and beverages, or by facility of which can distract the patient's attention when waiting such as the lactation room, or play corner for children.

The importance of paying attention to the service environment is strengthened by its inclusion as one of several key components in a widely recognized conceptualization of services. Environmental elements in the management of services, were found to affect the affective circumstances of individuals which consisted of the interaction of pleasure and passion that had positive or negative sides. Research has shown that, the perception of time can be affect by internal conditions as the effect of reaction to external stimuli in the physical environment of the service, in which there is experience of waiting from consumers, due to delays or queues. The service environment can influence perceptions of waiting time, thereby affecting the overall evaluation of service utilization [23].

The result of the hypothesis test in the analysis model (Table 6), shows that the hypothesis is accepted, where the waiting environment affected the perception of waiting time. The results of PLS analysis with bootstrap obtained a t-value of 2,463 indicating a value> 1.96, which means that the conducive waiting environment had an impact on the perception of the patient's waiting time.

The results of this study confirm previous study, where patients in attractive waiting rooms, such as comfortable room temperatures, nice furniture and comfortable waits can feel shorter waiting times [18], even by adding artificial ornaments such as flowers can increase comfort while waiting [19].

According to the literature on waiting time, individuals pay less attention to the waiting process if other stimuli divert their attention [20]. With a waiting environment that is able to distract patients while waiting for service, it can improve the perception of waiting time for feeling shorter, which means a conducive waiting environment can make the wait feel short.

The waiting environment is the patient's perception of the management's treatment in the waiting environment to distract respondents while they are waiting. The service environment can influence perceptions of waiting time, thereby affecting the overall evaluation of service utilization [23]. The implications of perceived shorter of patient waiting times have a large impact on satisfaction.

Managing patient waiting time perceptions by providing a pleasant experience while waiting, completing patients with adequate facilities and entertainment to distract the patient's attention during the waiting period of service, as well as providing long-term certainty of the services he awaits, allegedly can increase the patient's desire to return utilize hospital services, or even provide recommendations to others to take advantage of services, which are needed in supporting the marketing quality of hospital services themselves.

A good perception of waiting time can compensate for the long actual waiting time, that is often found in queues at the outpatient unit of Kendari Regional Public Hospital. Thus, if management cannot avoid the long waiting times for each service unit, it can shift its management concentration by maximizing the psychology of waiting for patients, through perception of waiting time. Psychological compensation through perceived shorter waiting time is expected to be and can act as a service recovery, to restore the decrease in satisfaction as a result of the length of waiting time as an unpleasant experience, so as to obtain an effective response and increase opportunities for customer loyalty, as the way to well show how valuable the customer is.

5 CONCLUSION

Data analysis in this study has answered the research hypothesis about the affect of the waiting environment on the patient's perception of waiting time. The queuing environment has a positive and significant effect on perception of waiting time. With a queuing environment that is able to distract patients while waiting for service, it can make perception of waiting time better, which means a conducive waiting environment can make waiting feel short and pleasant.

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