IMPLEMENTING GREY MODEL AND VALUE ANALYSIS IN QFD PROCESS TO INCREASE CUSTOMER SATISFACTION (CASE STUDY AT JUANDA INTERNATIONAL AIRPORT-SURABAYA)

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ABSTRACT

The increasing number of passenger in Juanda International Airport each year would be essential for the airport management to increase customer satisfaction in delivering their services. This improvement effort is related with the amount of passenger, airlines occupancy, and rented tenant space which significantly contributed to the airport's overall profit.

The voice of customer is useful to understand the existing condition and give suggestions for airport's future development. In this paper, the voice of customer will be gathered from the questionnaire and made up into the House of Quality (HOQ) as part of Quality Function Deployment (QFD). This method will reveal the importance and performance level of Juanda International Airport along with other necessary measurement.

Grey Modeling will be used in this activity to prioritize the attributes. Further, the customer top priority attributes would be also analyzed its worth using Value Analysis (VA) by comparing the grey total score with cost from the airport's management point of view. This complete package of process will give an idea on how such improvement would gain if particular scenario is being implemented.

Using the Pareto's principle of 80-20, the most critical final improvement to be implemented is those in the top 20% of VA score, which is all of the first 11 out of 62 technical measures.

Keywords: Airport Management, Grey Relational Analysis, Quality Function Deployment, Value Analysis.

1. INTRODUCTION

Juanda International Airport is located 20 km away south from Surabaya, the second largest city of Indonesia. Juanda International Airport has become one of the busiest airports in Indonesia with 320 times air transport of international purpose and domestic with passengers more than 10.000 daily. Unfortunately, some customers do not satisfy with the airport service regarding its cleanliness, queue line in several points, crew responsiveness, waiting room or other important attributes to them.

The Voice of Customer (VOC) is useful to mitigate the judgment upon the existing condition and the previous development plan by the management. Furthermore, it is also very important in the matter of giving suggestions for future development. Customer of airport are varies from the passengers, employees, airlines, tenant, and etc. This study focuses on passengers (air travelers), they are the end users of airport facilities and services.

VOC queries were gathered from the questionnaire and made up into the House of Quality as part of Quality Function Deployment, a method for developing a design quality aimed at satisfying the customer and then translating the customer's demand into design targets and major quality assurance points to be used throughout the production phase (Akao, 1994).

The attributes in VOC questionnaire is derived from Fodness and Murray (2005) on Passenger's expectation of airport service quality and confirmed by the Juanda Airport management. Grey system theory method will be used to prioritize the attributes. Grey system theory was originated by Deng (1982) and has been widely used to solve the uncertainly problems under the discrete data and incomplete information (Wu, 2002). Grey system can generate satisfactory outcomes using a relatively small amount of data or with great variability in factors since it can increase the data regularity with proper data treatment (Wu, 2002)

Further, the customer top priority attributes would be analyzed of its value using value analysis. Determining on how such improvement would gain for the customer if particular scenario is being done. Value Analysis should be done in this phase, because it is needed to understand that particular improvement scenario would actually do a positive contribution for the customer satisfaction, not a mere a mere wasteful action.

1.1 Quality Function Deployment (QFD) phase

QFD defined by Akao (1994) is "a method for developing a design quality aimed at satisfying the customer and then translating the customer's demand into design targets and major quality assurance points to be used throughout the production phase."

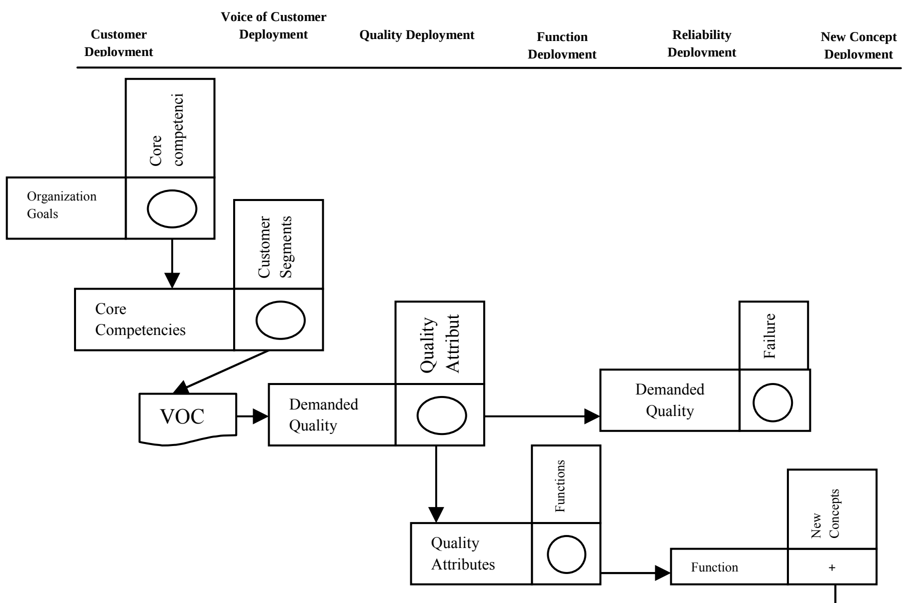

Figure 1 QFD For Service Industry Phase (Wu, 2005)

The most commonly QFD model in literature is a four-phase m[illegible]epicted in Figure 1 (Wu, 2005). (1) Customer Deployment: Deployment of organizational goals into core competencies, into customer, into target customer. Tools: AHP, Matrix, Matrix Data Analysis Charts. (2) Voice of Customer Deployment: Record raw customer data, use characteristics, and separate the different types of service attributes. (3) Quality Deployment: Translate customer demanded quality and priorities into measurable service quality attributes. (4) Function Deployment: Identify functional areas of the organization that are critical to performing tasks that must achieve the quality attribute targets. Tools: Affinity Diagram, Hierarchy Diagram

(Function Tree), Relationships Matrix. (5) Reliability Deployment: Identify and prevent failures of critical customer requirements. (6) Process Deployment: Diagram the current and reengineered processes. Tools: Blueprinting. (7) New Concept Deployment: Used in conjunction with Quality Improvement Stories to select a new process. (8) Task Deployment: Break down critical jobs into tasks and steps.

1.2 Grey System Theory Procedures

The areas covered and applied by grey theory include systems analysis, data processing, modeling, prediction, decision making and control (Wu, 2002). There are three types of grey model, they are: GM(1,1) model, GM(1,N) model and GM(0,N) model. These models use dummy concepts to translate different equations into differential equations.

GM(1,1) model is typically applied to grey forecasting, in which the first number in the brackets denotes the order of differential equation (first order) and the second indicates the number of variables. While GM(1,N) and GM(0,N) models are to carry out the calculation of measurement among the discrete sequences and to compensate the disadvantages of the traditional methods. The definition of GM(1,N) model is as follows:

$$x_1^{(0)}(k) + a z_1^{(1)}(k) = \sum_{j=2}^{N} b_j x_j^{(1)}(k) \quad \ldots\ldots\ldots\ldots\ldots\ldots.. (1)$$

Where k =1,2,3, . . . ,n, $z_1^{(1)}(k)=0.5x_1^{(1)}(k)+0.5x_1^{(1)}(k-1)$ for $k\geq 2$, and a and b_j are coefficients. To compute the results, the first step is to set up the original or observed series, which is $x_1^{(0)}(k)=(x_1^{(0)}(1),x_1^{(0)}(2), \ldots, x_1^{(0)}(k), \ldots, x_1^{(0)}(n))$. Then the next step is to set up accumulative generating operation (AGO) series of $x^{(0)}$, where x(0) = x(1) = $x^{(0)} - x^{(1)} - \sum_{m=1}^{N} x^{(0)}(m)$.

By integrating the AGO series of $x^{(0)}$ into Eq. 1, Eq. 1 can be expressed as a matrix format:

$$\begin{bmatrix} x_1^{(0)}(2) \\ x_1^{(0)}(3) \\ \vdots \\ x_1^{(0)}(n) \end{bmatrix} = \begin{bmatrix} -z_1^{(1)}(2) & x_2^{(1)}(2) & \cdots & x_N^{(1)}(2) \\ -z_1^{(1)}(3) & x_2^{(1)}(3) & \cdots & x_N^{(1)}(3) \\ \vdots & \vdots & \ddots & \vdots \\ -z_1^{(1)}(n) & x_2^{(1)}(n) & \cdots & x_N^{(1)}(n) \end{bmatrix} \begin{bmatrix} a \\ b_2 \\ \vdots \\ b_N \end{bmatrix} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots(2)$$

Therefore, the absolute values of b2, b3,..., and bN can be solved from Eq. 2, and the relationship between the major and influencing series can be found. Any factor which has higher absolute value of bN is considered to have higher impact in the system.

GM(0,N) model is a special case of GM(1,N) and is to investigate the cardinal relationship during the Nth variable[16]. In addition, GM(0,N) model is based on the static state, whereas GM(1,N) model is based on the dynamic state. The definition of GM(0,N) model is

$$a z_1^{(0)}(k) = \sum_{j=2}^{N} b_j x_j^{(1)}(k) \quad \ldots\ldots\ldots\ldots\ldots..(3)$$

Where $z_1^{(1)}(k)=0.5x_1^{(1)}(k)+0.5x_1^{(1)}(k-1)$ for $k\geq 2$, and a and b_j are coefficients. The computational steps are quite similar to those of GM(1,N) model discussed earlier. Thus, Eq. 3 can be expanded as a matrix format similar to Eq. 2:

$$\begin{bmatrix} 0.5x_1^{(1)}(1)+0.5x_1^{(1)}(2) \\ 0.5x_1^{(1)}(2)+0.5x_1^{(1)}(3) \\ \vdots \\ 0.5x_1^{(1)}(n-1)+0.5x_1^{(1)}(n) \end{bmatrix} = \begin{bmatrix} x_2^{(1)}(2) & x_3^{(1)}(2) & \cdots & x_N^{(1)}(2) \\ x_2^{(1)}(3) & x_3^{(1)}(3) & \cdots & x_N^{(1)}(3) \\ \vdots & \vdots & \ddots & \vdots \\ x_2^{(1)}(n) & x_3^{(1)}(n) & \cdots & x_N^{(1)}(n) \end{bmatrix} \begin{bmatrix} \frac{b_2}{a} \\ \frac{b_3}{a} \\ \vdots \\ \frac{b_N}{a} \end{bmatrix} \quad \ldots\ldots\ldots\ldots\ldots\ldots(4)$$

If we assume $b_N/a = \hat{b}_m$, where m=2, 3, 4, . . . ,N, then, Eq. 4 is simplified as follows:

$$\begin{bmatrix} 0.5x_1^{(1)}(1)+0.5x_1^{(1)}(2) \\ 0.5x_1^{(1)}(2)+0.5x_1^{(1)}(3) \\ \vdots \\ 0.5x_1^{(1)}(n-1)+0.5x_1^{(1)}(n) \end{bmatrix} = \begin{bmatrix} x_2^{(1)}(2) & x_3^{(1)}(2) & \cdots & x_N^{(1)}(2) \\ x_2^{(1)}(3) & x_3^{(1)}(3) & \cdots & x_N^{(1)}(3) \\ \vdots & \vdots & \ddots & \vdots \\ x_2^{(1)}(n) & x_3^{(1)}(n) & \cdots & x_N^{(1)}(n) \end{bmatrix} \begin{bmatrix} \hat{b}_2 \\ \hat{b}_3 \\ \vdots \\ \hat{b}_N \end{bmatrix} \quad \ldots\ldots\ldots\ldots\ldots\ldots(5)$$

Based upon Eq. 5, the absolute values of $\hat{b}_2$, $\hat{b}_3$,..., and $\hat{b}_N$ can be solved, and the relationship between the major and the influencing series can be analyzed.

1.3 Value Analysis

A product or service is generally considered to have good value if that product or service has appropriate performance and cost. It can almost truthfully be said that, by this definition, value can be increased by either increasing the performance or decreasing the cost (Miles, 1972) as stated in Eq.6.

$$\text{Value Analysis Point} = \frac{\text{Score Value}}{\text{Cost}} \quad \ldots\ldots\ldots\ldots\ldots\ldots(6)$$

2. CASE STUDY

The attributes in Voice of Customer (VOC) to be put in the questionnaire is derived from Fodness and Murray (2005) journal on Passenger's expectation of airport service quality and confirmed by the Juanda Airport management. The reason is because this research is done based on three different qualitative methodologies: in depth interview of 100 passengers, 72 focus group methodology of frequent flyers and also 1500 passengers website comments from many nationalities all over the world that eventually reflect the international airport customers demands. The complete VOC as an attributes can be seen on Table 1 at the last page.

2.1 QFD

The complete QFD tables can be seen on Table 2 (at the last page), while the formula of each column tabulation process is given as follows.

Sales point : 1 if there is no / very low selling point, 1,2 if moderate selling point and 1.5 if there is High / strong selling point.

Goal described in a numerical scale set in 1 -5. There are a lot of considerations in the matter of setting up the goal value, like the limitation of capital, human resources, regulation and etc. Improvement Ratio is resulted from the Goal value divided with average performance while raw weight is calculated from Importance to Customer x Improvement Ratio x Sales Point

2.2 Grey Modeling – GM(1,N)

The grey tabulation process starts with multiplying each technical response's weight with the attributes raw weight as seen on Table 3 and Table 4.

Table 3 HOQ Relationship

Attributes (W)	Technical Response (H)								Raw Weight
	H1	H2	H3	H4	H5	H6	…	H62	
W1	9						…		5.213
W2		9					…		10.469
W3			9				…		7.605
W4				9			…		6.882
W5	3				9		…		7.757
W6		3				9	…		6.461
…	…	…	…	…	…	…	…	…	…
W62							…	9	4.202

Table 4 The relationship between WHATs and HOWs

Attributes (W)	Technical Response (H)							
	H1	H2	H3	H4	H5	H6	…	H62
W1	46.92	0.0	0	0	0	0	…	0
W2	0	94.22	0	0	0	0	…	0
W3	0	0	68.44	0	0	0	…	0
W4	0	0	0	61.94	0	0	…	0
W5	23.27	0	0	0	69.81	0	…	0
W6	0	19.38	0	0	0.0	58.15	…	0
…	…	…	…	…	…	…	…	…
W62	0	0	0	0	0	0	…	37.81

If GM(1,N) model is to be used to prioritize technical measures (H), the first procedure is setting up the original series. In this case, x1(0)(k) = (1,2,3,4,5, . .,62), where k=1,2,3,4,5, . .,62 because there are 62 customer requirements in the matrix. The next step is to set up Accumulative Generating Operation (AGO) series of x(0) shown in Table 5.

Table 5 GM(1,N) AGO series of $x^{(0)}$

$X_1^{(1)}$	= (1	3	6	10	15	21	…	1953)
$X_2^{(1)}$	= (46.92	46.92	46.92	46.92	70.19	70.19	…	151.70)
$X_3^{(1)}$	= (0	94.22	94.22	94.22	94.22	113.60	…	134.01)
$X_4^{(1)}$	= (0	0	68.44	68.44	68.44	68.44	…	220.53)
$X_5^{(1)}$	= (0	0	0	61.94	61.94	61.94	…	157.27)
$X_6^{(1)}$	= (0	0	0	0	69.81	69.81	…	105.40)
…	… …	…	…	…	…	…	…	…
$X_{62}^{(1)}$	= (0	0	0	0	0	0	…	90.98)

Where X2, X3, X4, X5, . . ,X63 represent Technical Measures (H) of H1, H2, H3, H4, H5, . .,H62 respectively. An then, z1(1) = ((1+3)/2, (3+6)/2, (6+10)/2, (10+15)/2, (10+15)/2, . . ,(1891+1953)/2. The next step is integrating the AGO series of x(0) into Eq. 2 shown in Figure 2.

$$
\underbrace{\begin{bmatrix} 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 7 \\ \ldots \\ 62 \end{bmatrix}}_{B}
=
\underbrace{\begin{pmatrix}
-2 & 46.92 & 94.22 & 0 & 0 & 0 & 0 & \ldots & 0 \\
-4.5 & 46.92 & 94.22 & 68.44 & 0 & 0 & 0 & \ldots & 0 \\
-8 & 46.92 & 94.22 & 68.44 & 61.94 & 0 & 0 & \ldots & 0 \\
-12.5 & 70.19 & 94.22 & 68.44 & 61.94 & 69.81 & 0 & \ldots & 0 \\
-18 & 70.19 & 113.60 & 68.44 & 61.94 & 69.81 & 58.15 & \ldots & 0 \\
-24.5 & 77.73 & 121.14 & 68.44 & 61.94 & 69.81 & 58.15 & \ldots & 0 \\
\ldots & \ldots & \ldots & \ldots & \ldots & \ldots & \ldots & \ldots & \ldots \\
-1922 & 151.71 & 134.01 & 220.54 & 157.28 & 105.41 & 138.57 & \ldots & 90.99
\end{pmatrix}}_{A}
\times
\underbrace{\begin{bmatrix} a \\ b_2 \\ b_3 \\ b_4 \\ b_5 \\ b_6 \\ \ldots \\ b_{61} \end{bmatrix}}_{C}
$$

Figure 2 Matrix on Step 3 GM(1,N)

$$B = A.C$$
$$C = (A^T A)^{-1} A^T B$$

$$c = \begin{pmatrix} a \\ b_2 \\ b_3 \\ b_4 \\ b_5 \\ b_6 \\ \dots \\ b_{61} \end{pmatrix} = \begin{pmatrix} 0.0396 \\ 0.1737 \\ -0.0904 \\ 0.0065 \\ 0.0145 \\ -0.0972 \\ \dots \\ 0.0781 \end{pmatrix}$$

2.3 Grey Modeling – GM(0,N)

In GM(0,N), the AGO series implemented is the same with GM(1,N) as provided in Table 3. By integrating the AGO series of x(0) into Eq. 5, Eq. 5 becomes a matrix shown in figure 3.

$$\underbrace{\begin{pmatrix} 2 \\ 4.5 \\ 8 \\ 12.5 \\ 18 \\ 24.5 \\ \dots \\ 1922 \end{pmatrix}}_{B} = \underbrace{\begin{pmatrix} 46.92 & 94.22 & 0 & 0 & 0 & 0 & \dots 0 \\ 46.92 & 94.22 & 68.44 & 0 & 0 & 0 & \dots 0 \\ 46.92 & 94.22 & 68.44 & 61.94 & 0 & 0 & \dots 0 \\ 70.19 & 94.22 & 68.44 & 61.94 & 69.81 & 0 & \dots 0 \\ 70.19 & 113.60 & 68.44 & 61.94 & 69.81 & 58.15 & \dots 0 \\ 77.73 & 121.14 & 68.44 & 61.94 & 69.81 & 58.15 & \dots 0 \\ \dots & \dots & \dots & \dots & \dots & \dots & \dots \dots \\ 151.71 & 134.01 & 220.54 & 157.28 & 105.41 & 138.57 & \dots 90.99 \end{pmatrix}}_{A} \times \underbrace{\begin{pmatrix} \hat{b}_2 \\ \hat{b}_3 \\ \hat{b}_4 \\ \hat{b}_5 \\ \hat{b}_6 \\ \hat{b}_7 \\ \dots \\ \hat{b}_{62} \end{pmatrix}}_{C}$$

Figure 3 Matrix on Step 3 GM(0,N)

$$B = A.C$$
$$C = (A^T A)^{-1} A^T B$$

$$c = \begin{pmatrix} \hat{b}_2 \\ \hat{b}_3 \\ \hat{b}_4 \\ \hat{b}_5 \\ \hat{b}_6 \\ \hat{b}_7 \\ \dots \\ \hat{b}_{62} \end{pmatrix} = \begin{pmatrix} -3.172 \\ 1.045 \\ -0.067 \\ -0.015 \\ 1.314 \\ 1.056 \\ \dots \\ 1.671 \end{pmatrix}$$

The grey tabulation result within GM(1,N) and GM(0,N) is combined to achieve real life situation representation provided in Table 6. The cost aspects of each technical response were assessed using a scale range of 0-5 reflected on Table 7. This mechanism is done because a specific cost information is confidential based on the company policy.

Table 6 Grey Model Tabulation Result

Technical Measures	GM(1,N)		GM(0,N)		$b_n + b\hat{}_n$
	C= (b_n)	|C|	C= ($b\hat{}_n$)	|C|	
*	a	0.0396	*	*	*
H 1	b_2	0.1737	b^2	3.1717	3.3454
H 2	b_3	0.0904	b^3	1.0454	1.1358
H 3	b_4	0.0065	b^4	0.0671	0.0736
…	…	…	…	…	…
H 62	b_{63}	0.0781	b^63	1.6712	1.7493

Table 7 Value Analysis

Rank	Technical Responses	Technical Measures	Total Score	Cost	VA
1	Training on employees tourism spot	H 1	3.3454	1	3.3454
2	Provide a complete and proper tourism information booth	H 2	1.1358	1	1.1358
3	Training on employee knowledge towards airport facility location	H 3	0.0736	0.5	0.1472
…	…	…	…	…	…
62	Training on employees hospitality	H 62	1.7493	1	1.7493

In the real life, there are some technical responses that are executed towards the same people, for inter-related purposes and may in the same time frame. Thus, the management commits to merge those technical responses into one relevant technical responses package. The merged technical responses are those under 'Training' aspects. Finally Table 8 shows the most critical technical responses. The bigger the VA point, the most critical it is for the company since it reflects the most cost effective and fulfills the customer satisfaction aspects

Table 8 Final Ranks

Rank	VA	Technical Responses	Technical Measures
1	3.7302	Provide hotel information booth	H 5
2	2.8755	Provide a different uniform for employees	H 30
3	1.6775	Provide a full window	H 10
4	1.2461	Provide beauty salon and recliner lounges	H 43
5	1.1358	Provide a complete and proper tourism information booth	H 1
6	1.0774	Merging Attributes (Training)	H2, H4, H28, H37, H40, H42, H48, H61
7	0.9606	Provide a smoking room	H 11
8	0.8816	Putting baggage claim service near the gate	H 26
9	0.8743	Add flight information display	H 4
10	0.8525	Provide shuttle bus	H 20
11	0.8514	Provide quiet room	H 40
…	…	…	…
55	0.0117	Provide sufficient and informative internal sign	H 7

Pareto's principle of 80/20 -a few (20 percent) are vital and many (80 percent) are trivial- is used to determine the top priority as a final improvement plan. There are final 55 technical responses based on Table 8. The 20% top priority (20% of 55 technical responses) is technical responses listed on the top 11.

3. CONCLUSIONS

This research is using 2 different kinds of grey model to determine the technical response rank. Both of the two is namely GM (1, N) and GM (0, N). This grey differential equation is a non-conventional differential equation. A normal differential equation is for studying finite information, while the grey differential equation is used for infinite information. However, they use the same form.

This grey differential method is fit to be used in the case study since the characteristics of Juanda airport that have "infinite information", the infinity in terms of the amount of the passengers that really dynamic / increasing or decreasing from time to time, different individual and personality, preferences, etc. It is also infinite in terms of factors related to the airport operation condition. For example like regulations, spreading disease, country's politic condition and others linked factors.

GM(1,N) is to be used in the dynamic circumstances while GM (0,N) is implemented in static condition. The static condition is something that can be predicted and happened in the same path, frequency, and etc. for example like there are some of the airport passengers that using the same facility each time they go to the airport. Static condition also implied in the amount of predicted passengers that increasing in the holiday season and decreasing / steady in the working day. This conditions of mix between dynamic- static needs a distinguished approach to determine and analyze it. So it is very justifiable and very proper to implement the combination of GM (1, N) and GM (0, N).

Grey Model also successful to capture the relationship between each technical response unlike the traditional model that consider technical response as one single and independent attributes that do not having relationship with other attribute.

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Table 2 QFD

No	**Attributes**	Attributes (W)	**Technical Response (H)**				Importance	Performance	Expected Performance	Sales Point	GOAL	Improvement Ratio	Raw Weight
			H1	H2	H..	H62							
1	The availability of proper tourism information booth	W1	9	…	…	…	3.975	3.050	3.960	1.0	4	1.311	5.213
2	Various transportation modes to the city centre	W2	…	9	…	…	4.390	3.145	4.470	1.5	5	1.590	10.469
…	…	…	…	…	…	…	…	…	…	…	…	…	…
62	Museum availability	W62	…	…	…	9	2.605	2.480	3.575	1.0	4	1.613	4.202

Table 1 Attributes Voice of Customer

Primary	No (W)	Attributes	Attributes (W)
Effectiveness	1	The availability of proper tourism information booth	W1
	2	Various transportation modes to the city centre	W2
	3	A clear announcement heard from every corner of the terminal	W3
	4	A sufficient flight information display	W4
	5	the availability of proper hotel / lodging information booth	W5
	6	a clear sign to airport's external facilities like parking lot, car rent, transportation, etc	W6
	7	a clear sign to airport's internal facilities	W7
	8	a clear flight information display	W8
	9	an availability of flight information display outside the airport building (parking lot, road access, etc)	W9
	10	a wide window for take off and airplane landing scenery	W10
	11	an availability of smoking area in every terminal	W11
	12	an announcement made by the airport regarding flight changes that might happened	W12
	13	Baggage security assurance	W13
Efficiency	14	an easy access within each facility without additional security procedure	W14
	15	a convenient security check procedure (baggage check, passenger, etc)	W15
	16	a small distance within each facility	W16
	17	each facility is available and nearly located in every terminal	W17
	18	a sufficient availability of trolley for passenger baggage	W18
	19	effortless way to find facility location (restaurant, toilet, entrance, etc)	W19
	20	easy access and nearly located terminal to the parking facility	W20
	21	a fast baggage process after the flight	W21
	22	a fast ticket check in queue	W22
	23	a short time needed to out from the plane after landing	W23
	24	an availability of escalator an moving walkways in every terminal	W24
	25	easy access to catch connecting flight	W25
	26	baggage claim service nearly located with the gate	W26
Interaction	27	a hospitality by airport employee that serve with smile	W27
	28	a fast response by airport employee regarding passenger complaint	W28
	29	airport employee knowledge on local area of interest	W29
	30	a differentiation of airport employee uniform based on their function	W30
	31	an airport employee courtesy	W31
	32	an airport employee enthusiasm in giving solutions towards passenger problems	W32
	33	a trustworthiness of airport employee	W33
	34	airport employee ability to point / guide out every facility location	W34
	35	availability of airport employee to provide individual service	W35
	36	an airport employee willingness to help passenger	W36
	37	a clean and tidy airport employee's uniform	W37
Productivity	38	an availability of praying room	W38
	39	an availability of meeting room	W39
	40	an availability of quiet room for sleeping, reading, etc	W40
	41	an availability of banking service	W41
	42	an availability of postage service	W42
	43	an availability of beauty salon, massage and recliner lounges	W43
	44	an availability of business centre (PC, Telephone, fax, etc)	W44
Décor	45	art work and decoration element in airport building	W45
	46	an airport decoration match with local culture	W46
	47	an modern and up to date airport decoration	W47
	48	airport cleanliness	W48
	49	waiting room bench / chair comfort ability	W49
	50	a music background sounding in every facility	W50
	51	a natural light in every part of the terminal	W51
	52	a spacious room to avoid crowd and passenger density	W52
Maintenance	53	a local culinary menu in airport restaurant	W53
	54	an availability of well known retail store	W54
	55	a wide range of cuisine option in airport restaurant	W55
	56	an availability of children playing ground	W56
	57	an availability of nursery facility (to change diapers, breastfeeding, etc)	W57
	58	an availability of store that sell local products	W58
	59	a proper retail / food pricing in airport	W59
	60	an availability of well known international restaurant chain	W60
	61	an availability of gym facility	W61
	62	museum availability	W62