International Journal of Innovative Research in Medical Science (IJIRMS)
Volume 03 Issue 03 March 2018, ISSN No. - 2455-8737
Available online at - www.ijirms.in

Open Access Journal | Research Article | DOI: 10.23958/ijirms/vol03-i03/02

Measuring Healthcare Service Quality for Inpatients in Significant Hospital at Developing Country

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Summary

Objective: *Measuring inpatient healthcare service quality for inpatients of significant private general hospital in developing countries by the functional quality and Technical quality.* ***Subject and method:*** *Cross-Sectional study, measure consumers' perceptions of inpatient in healthcare service quality for Private hospital by both in functional and technical quality, using the SERVQUAL instrument with five generic dimensions (the original 22 scores) for functional quality to combinate with the 8 dimensions (8 scores) for technical quality, study a significatn private hospital's Triduc general hospital in Vietnam country; Most inpatients whole length of stay in General clinic department at the hospital, during from November 2013 to January 2014.* ***Result:*** *Altogether 230 persons were interviewed and 216 patients were identified by stratified random sampling. The functional quality by SERQUAL intrument had 5 items (22 scores) are the "Reliability", "Responsiveness", "Assurance", "Empathy","Tangible" including and Technical quality by 8 item (8 scores); These items have highly patient satisfaction (PS) mean are "from 3.828 to 4.425", and Cronbach alpha for the first construct of private are 0.882, 0.871, 0.845, 0.794, 0.864, 0.958, respectively; Responsiveness dimension with 4 items of the case is moved. After performing factor analysis, we have four final factors distinguish drawn are factor 1 (Reliability) with 15 variables, factor 2 (Assurance) with 4 variables, factor 3 (Tangible) with 3 variables, factor 4 (Technical quality) with 8 variables; the model had highly Corrected Item-Total Correlation of PS and reliability coefficient; 02 factors not achieve that distinction is worth understanding and guarantee.* ***Conclusion:*** *Adjusted research model for the private hospital have four contruct from levels of customer satisfaction about service quality is influenced by the SERVQUAL (3 items are responsivenes, reliability and tangibles with 22 scores) and Technical Quality intrument (8 scores). The model provides feedback on the quality of a private hospital experience from the adult inpatient's perspective at the developing country.*

Keywords: ***Measuring healthcare service quality, SERVQUAL, Technical quality, inpatient, Private hospital.***

1. Bachround

Private Hospital as TriDuc genereal hospital is the significant Private hospital in Vietnam Country's one developing country, the hospital was founded in 2007 year; the Hospital is a multi-field medical department in Hanoi and is considered one of the significant private hospital in Vietnam.[1,2] Measure consumers' perceptions satisfaction of healthcare quality with services provided by the concerned hospital is very important from two angles. Firstly, make to constitute patients's happiness by they are in direct communication with with the hospital. Second, hospital administrations can identify the needs of patients and identify appropriate model for the hospital.[3,4]

Measures healthcare by SERVQUAL instrument has been the predominant method used to mesure consumer's perceptions of service quality by consumers; It has five generic dimensions or factors (the original 22-item instrument) includes (1) Reliability: Ability to perform the promised service dependably and accurately. (2) Responsiveness: Willingness to help customers and provide prompt service. (3) Assurance (including competence, courtesy, credibility and security): Knowledge and courtesy of employees and their ability to inspire trust and confidence. (4) Empathy (including access, communication, understanding the customer): Caring and individualized attention that the firm provides to its customers. (5) Tangibles: Physical facilities, equipment and appearance of personnel.[5]

The SERVQUAL instrument had 22 statements measure the performance across these five dimensions, using a five point likert scale measuring both customer expectation on both the quality of services expected and perceptions of services received then feedback from customer surveys can be help the administrators have a way to solve the problem. In the following, the application of SERVQUAL approach is more specified with example in a catering hospital. In addition, we refer to the John E. Ware model to measure for technical

quality of healthcare (Questionnaire items refer to eight dimension are: Abilily, accuracy, experience, throughness, and training of providers as well as the extent to which they pay attention to details, avoid mistakes, give good examinations, and clearly explain what is expected of their patients).

Therefore, this study report to findings of this survey is an overview of the Index and item scores for The SERVQUAL indices combiner to technical quality index in widen healthcare service quality about the outpatient Satisfaction and concerns with respect to first referral private hospitals in Vietnam's developing countries and over the worlds. Thereby proposed some solutions to improve the quality of health care, ensure patient satisfaction is the best for the hospital.

2. Rearch Methodology

2.1. Selection of Study Area: General clinic department, Private Hospital

2.2. Selection of Respondents

Selection of study set and sampling of patients: Private hospital's TriDuc General Hospital was selected for the study. We were build-up the sampling frame of patients. Study in patients before leaving the hospital who have completed the treatment in the hospital. Measures medical treatment when they have outcome from hospital.

2.3. Method

Interval Measurement for Service quality and Patient Satisfaction:

This measurement has the power to measure the distance between any two points on the scale.Respondents are to provide answers on their expectations and perceptions based on the 5 point Likert scale.Number 1 implies SD - Strongly Disagree, Number 2 implies D - Disagree, Number 3 implies N – Neither disagree or agree, Number 4 implies A - Agree, Number 5 implies SA – Strongly agree.[5]

Functional quality had 5 items with 22 scores and technical quality had 8 scores:

H1a: Reliability (IVA): When hospital promises to do something by a certain time, they do it (A1). Hospital/staff have notification to avoid mistakes (A2). Hospital perform the services for me right at the first time (A3). Doctors are clearly explained and reference to comments patients before appoint medical tests (A4). When customer has a problem, Doctors/staff exhibits sincere interest in solving patients' problems (A5).

H1b: Responsiveness (IVB): Hospital staff make information easily obtainable in explanation of procedures or services provided (B1). Doctors/staffs give prompt services to customers (B2). Doctors/staffs are always willing to help patients (B3). The Doctors are never too busy to respond to customers requests (B4).

H1c: Assurance (IVC): Attitude and behavior of Doctors/staff make confidence in customers (C1). Patients feel secure in receiving medical care (C2). Hospital staff are polite to customers (C3). Doctors/staff have knowledge to answer customers' questions (C4).

H1d: Empathy (IVD): Hospital make sure choice individualised of patients (D1). Operating hours of hospital are convenient to Customers (D2). Doctors focus attention what most worried patients (D3). Employees of hospital understand the specific needs of their customers (D4). Hospital staff guide patients where to go and what to do (D5).

H1e: Tangibles (IVE): The hospital's equipment is modern equipments and well maintained (E1). Physical facilities are virtually appealing (E2). Doctors and staff are well dressed and appear neat (E3). Clean, comfortable and Visually attractive environment (E4).

H1f: Techinical Quality (IVF): Doctor's office has everything needed to provide complete care (F1). Doctor make me confidence that their diagnosis is correct (F2). I belive in results tests of machines system, technology at the hospital is accurate (F3). I have seen Doctors/staff very experience with my medical problems (F4). Cooperation between doctors, nurses and other hospital staff about your treatment (F5). My doctors are very competent and well-trained (F6). When I go for medical care, they are careful to check everything when treating and examining me (F7). Doctors/staff have explained thoroughly medical conditions to patients (F8).

Independent Variables (IV) and Dependent Variables (DV):

In the case, Service quality can be Independent variable (IV) and Dependent variable (DV). Patients Satisfaction (PS), Functional quality (FQ) and Technical quality (TQ) can be Independent variable or Dependent variable:

1. First, Dependent variable (DV) is Service Quality (SQ). Independent variables (DV) are Reliability, Responsiveness, Assurance, Empathy, Tangibles and Technical Quality.
2. Second, Dependent variable (DV) is Functional Quality (FQ). Independent variables (IV) are Reliability, Responsiveness, Assurance, Empathy and Tangibles.
3. Third, Dependent variable (DV) is Technical Quality. Independent variable (IV) is one dimension with 8 items of Technical quality of care.

Research Hypotheses: As a result, for the purpose of this research, we argue the SERVQUAL indices is reliable which instrument of measure have five dimensions of patient satisfaction in functional quality and eight dimentions of patient satisfaction in technical quality are take up a tool of measuring healthcare service quality.

- **H1a (Hypothesis 1a):** There is relationship between Reliability and Service Quality.
- **H1b (Hypothesis 1b):** There is a relationship between Responsiveness and Service Quality.
- **H1c (Hypothesis 1c):** There is a relationship between Assurance and Service Quality.
- **H1d (Hypothesis 1d):** There is a relationship between Empathy and Service Quality.
- **H1e (Hypothesis 1e):** There is a relationship between Tangibles and Service Quality.
- **H1f (Hypothesis 1f):** There is a relationship between Technical quality and Service Quality.

Thereby proposed some suggestions to improve the quality of health care, ensure clients satisfaction for the hospital

Questionnaire Administration:
Questionnaire were completed by inpatients at Private Hospital hospital (n= 216) during three months.

All Data analysis has been carried out with the IBM SPSS 21.0.[6,7]

3. Results

From the samples characteristics in Private hospital: 230 questionnaires were distributed, the rate of completion is 93.9% (n = 216). There is a 216 questionnaire are completed, frequency distribution of gender in the hospital are 94 male (43.5%) and 122 female (56.5%).

3.1. Descriptive statistics for hearthcare quality variables

Descriptive Statistics of healthcare service quality constructs of the private hospital with 6 dimensions (n=216) are Reliability (IVA), Responsiveness (IVB), Assurance (IVC), Empathy (IVD), Tangible (IVE), Technical Quality (IVF) have mean ± SD (Std. Deviation)of each demensions are 4.1102 ± 0.59758, 4.1875 ± 0.58828, 4.2523 ± 0.57669, 4.1787 ± 0.53083, 4.0023 ± 0.71243, 4.0833 ± 0.70824, respectively.

3.2. Reliability (Cronbach Alpha) of Variable and Average of Healthcare service quality Variables

Reliability (IVA): Reliability is the first service quality construct consists of 5 items in this study (IVA1, IVA2, IVA3, IVA4, IVA5). These five items with the reliability coefficient, Cronbach Alpha for the firth construct of private hospital is (0.882).

Responsiveness (IVB): The second service quality construct comprised of 4 items which includes: IVB1, IVB2, IVB3, IVB4. These three items with the reliability coefficient, Cronbach Alpha for the second construct of private hospitals is (0.871).

Assurance (IVC): The Third service quality construct consists of 4 item which include IVC1, IVC2, IVC3, IVC4. These six items with the reliability coefficient, Cronbach Alpha for the third construct for private hospitals is (0.845).

Empathy (IVD): Fourth service quality construct of 5 items which actually represents the IVD1, IVD2, IVD3, IVD4, IVD5. It includes 5 items and these 5 items with the reliability coefficient Cronbach Alpha, for the first construct for private hospitals is (0.794).

Tangibles (IVE): Fifth service quality construct comprised of 4 items which includes IVE1, IVE2, IVE3, IVE4. These four items with the reliability coefficient, Cronbach Alpha of the fifth construct for private hospitals is (0.864).

Technical Quality (IVF): This dimension, sixth service quality construct comprised of 8 items which includes: IVF1, IVF2, IVF3, IVF4, IVF5, IVF6, IVF7, IVF8. These eighth items with the reliability coefficient, Cronbach Alpha of the sixth construct for private hospitals is (0.958).

Theseby, PS of SQ with 6 dimentions had Cronbach Alpha = 0.939, and 6 dimentions have corrected item – total correlation are high (IVA = 0.797, IVB = 0.832, IVC = 0.862, IVD = 0.722, IVE = 0.901, respectively), and > 0.3.

3.3. Exploratory Factor Analysis (EFA) for Private hospital

3.3.1. CEA for Functional quality (SERVQUAL) of Private hospital

Factor analysis discovered 4 EFA with quality components (1st Cycle of Factor Analysis):
After performing factor analysis of 22 variables as above (4 dimension with 22 items), all variables have coefficient Reliability are > 0.05, accepted; we have 3 elements are drawn as follows:

KMO = 0.912 (>0.5), this mean that the sample size was full for the technical factor analysis. The Bartlett was measurement tested for the null hypothesis with the original correlation matrix is an identity matrix. The result had the Bartlett test of sphericity with significant = 0.000 < 0.05.

It explained 66.942% of the difference of these variables. However, the remainder were difficult explained by the factor and variables in the analysis. Rotating the factor for three iterations were consistent with the model and we had build a formulization in the current study. Thus, the factors analysis that have shown the functional quality model assessment was structured in the form of a three component structure as follows (Completed the demonstration of the component matrix factor rotation and structures of the study).

The variable transfer factor values are in two different factors as IVB3 variables in factor 1 (0.581) and factor 2 (0.608), which shows the correlation of these variables with two factors that are not really explicit. After performing factor rotation, variable coefficients in the larger factors proved it mainly correlated with factors that, therefore, it belongs to that factor. IVB3 variable belongs to factor 2. After performing factor analysis with 22 variables as above, we have three elements are drawn:

The variable transfer factor values are in two different factors as IVB4 variables in factor 1 (0.656) and factor 2 (0.567), which shows the correlation of these variables with two factors that are not really explicit. After performing factor rotation, variable coefficients in the larger factors proved it mainly correlated with factors that, therefore, it belongs to that factor. IVB4 variable belongs to factor 1. After performing factor analysis with 22 variables as above, we have three elements are drawn:

The variable transfer factor values are in two different factors as IVE3 variables in factor 2 (0.694) and factor 3 (0.524), which shows the correlation of these variables with two factors that are not really explicit. After performing factor rotation, variable coefficients in the larger factors proved it mainly correlated with factors that, therefore, it belongs to that factor. IVE3 variable belongs to factor 2. After performing factor analysis with 22 variables as above, we have three elements are drawn:

Factor 1 (FA1 - Reliability) includes the following 15 variables: IVA1, IVA2, IVA3, IVA4, IVA5, IVB1, IVB2, IVB4, IVC1, IVC2, IVC3, IVD1, IVD3, IVD4, IVD5.

Factor 2 (FA2 – Assurance) includes the following 4 variables: IVB3, IVC3, IVD2, IVE3

Factor 3 (FA3 - Tangibles) includes the following 3 variables: IVE1, IVE2 and IVE4.

EFA for the first Functional quality (FA1) of Private hospital: Factor analysis discovered 15 EFA with quality components:After performing FQA1 factor analysis of 15 variables as above (IVA1, IVA2, IVA3, IVA4, IVA5, IVB1, IVB2, IVB4, IVC1, IVC2, IVC3, IVD1, IVD3, IVD4, IVD5), we have 1 elements are drawn and obtained results: KMO = 0.927 (>0.5), sig. = 0.000 (<0.05) in Bartlett's test of sphericity. Therefore suitable to conditions of factor analysis. One factor (Only one component was extracted) is drawn with variance extracted is 57.770%.It explained 57.770% of the difference of these variables, the remainder were difficult explained by the factor and variables in the analysis.

EFA for the second Functional quality (FA2) of Private hospital: Factor analysis discovered 4 EFA with quality components: Continues to performing FQA2 factor analysis of 4 variables as above (IVB3, IVC2, IVD2, IVE3), we have 1 elements are drawn and obtained results: KMO = 0.819 (>0.5), sig. = 0.000 (<0.05) in Bartlett's test of sphericity. Therefore suitable to conditions of factor analysis. One factor (Only one component was extracted) is drawn with variance extracted is 68.650%. It explained 68.650% of the difference of these variables, the remainder were difficult explained by the factor and variables in the analysis.

EFA for the third Functional quality (FA3) of Private hospital: Factor analysis discovered 3 EFA with quality components: Continues to performing FA3 factor analysis of 3 variables as above (IVE1, IVE2 and IVE4), we have 1 elements are drawn and obtained results: KMO = 0.731 (>0.5), sig. = 0.000 (<0.05) in Bartlett's test of sphericity. Therefore suitable to conditions of factor analysis. One factor (Only one component was extracted) is drawn with variance extracted is 80.389%.It explained 80.389% of the difference of these variables, the remainder were difficult explained by the factor and variables in the analysis.

EFA for Functional quality (FQA) of Private hospital: Factor analysis discovered EFA with Functional quality components Group: Continues to performing FQA factor group analysis of 3 factor as above (FA1, FA2 and FA3), we have 1 elements are drawn and obtained results: KMO = 0.688 (>0.5), sig. = 0.000 (<0.05) in Bartlett's test of sphericity. Therefore suitable to conditions of factor analysis. One factor (Only one component was extracted) is drawn with variance extracted is 73.527%. It explained 73.527% of the difference of these variables, the remainder were difficultc explained by the factors and variables in the analysis. As can be seen from above, the rotation of convergence in three iterations were consistent with the framework the researchers had built in the current research. Thus, the model was constructed by three major components that was proven to be the most suitable measurement for functional quality in the field of research.

3.3.2. CEA for Technical quality (Technical Quality Care) of Private hospital

Factor analysis discovered 8 EFA with quality components: After performing factor analysis of 8 variables as above, we have 1 elements are drawn as follows: KMO = 0.947 is > 0.5, this mean that the sample size was full for the technical factor analysis. The Bartlett was measurement tested for the null hypothesis with the original correlation matrix is an identity matrix. The result had the Bartlett test of sphericity with significant = 0.000 < 0.05. It explained 77.248% of the difference of these variables, the remainder were difficult explained by the variables in the analysis.

3.3.3. CEA for SERVICE QUALITY

Table 1: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.062	76.548	76.548	3.062	76.548	76.548
2	.514	12.856	89.404			
3	.314	7.844	97.248			
4	.110	2.752	100.000			

Extraction Method: Principal Component Analysis.

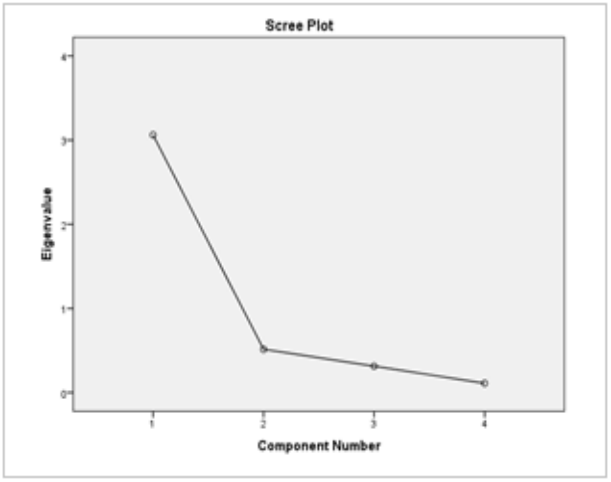

Figure 1: Component Number (1 components extracted: Extraction Method by Principal Component Analysis)

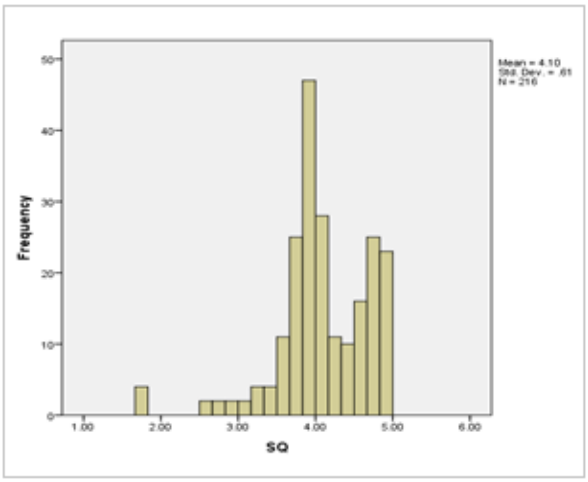

Figure 2: The histogram of residuals show approximate distribution of standardized residuals

Factor analysis discovered 4 EFA with quality service components: After performing factor analysis of Service quality (FA1, FA2, FA3, TQ) with 30 variables as above (22 items of functional quality and 8 items of technical quality), we have 4 elements are drawn as follows: KMO = 0.769 (> 0.5), the meaning that the sample size was full for the technical factor analysis. The Bartlett was measurement tested for the null hypothesis with the original correlation matrix is an identity matrix. The result had the Bartlett test of sphericity with significant = 0.000 < 0.05. Therefore suitable to conditions of factor analysis.

4 factors (FA1, FA2, FA3, TQ) explained almost 76.548% with variance extracted, the remainder can not be explained by the variables in the analysis. The rotation of convergence in 4 iterations were consistent with the framework the researchers had built in the current research. Thus, the model was constructed by 4 major components that was proven to be the most suitable measurement for service quality in the field of research (Completed the demonstration of the component matrix factor rotation and structures of the study).

- ***After performing factor analysis, we have four elements are drawn:***

Factor 1 (FA1 - Reliability) includes the following 15 variables (IVA1, IVA2, IVA3, IVA4, IVA5, IVB1, IVB2, IVB4, IVC1, IVC2, IVC3, IVD1, IVD3, IVD4, IVD5). Factor 2 (FA2 - Assurance) includes the following 4 variables (IVB3, IVC3, IVD2, IVE3). Factor 3 (FA3 - Tangibles) includes the following 3 variables (IVE1, IVE2, IVE4). Factor 4 (TQ – Technical Quality) includes the following 8 variables (IVF1, IVF2, IVF3, IVF4, IVF5, IVF6, IVF7, IVF8).

3.4. Cronbach Alpha of factor and Model for Private hospital

3.4.1. Reliability for Functional quality (SERVQUAL) of Private hospital

The reliability coefficient, FA1 is bring to checks in the Cronbach alpha coefficient for the 15 construct of Functional Quality 1 (FA1), Test results: Cronbach alpha coefficient = 0.947 and all the variable in functional quality have coefficients of Corrected item - Total Correlation are greater than 0.3 (Coefficients Corrected Item-Total Correlation of eighth construct of FQA1 are IVA1 = 0.747, IVA2 = 0.685, IVA3 = 0.727, IVA4 = 0.720, IVA5 = 0.766, IVB1 = 0.735, IVB2 = 0.667, IVB4 = 0.781, IVC1 = 0.713, IVC2 = 0.756, IVC 4 = 0.698, IVD1 = 0.670, IVD3 = 0.709, IVD4 = 0.755, IVD5 = 0.64, and these variables had Cronbach's Alpha if Item Deleted are 0.943, 0.944, 0.943, 0.942, 0.943, 0.945, 0.942, 0.944, 0.943, 0.944, 0.945, 0.944, 0.943, 0.945, respectively, satisfactory inspection, ensure conditions for inclusion in the next model analysis.

The reliability coefficient, FA2 is bring to checks in the Cronbach alpha coefficient for the sixth construct of Functional Quality 2, Test results: Cronbach alpha coefficient = 0.846 and all the variable in FA2 have coefficients of Corrected item - Total Correlation are greater than 0.3 (Coefficients Corrected Item-Total Correlation of sixth construct of Functional Quality 2 are IVB3 = 0.649, IVC3 = 0.730, IVD2 = 0.702, IVE3 = 0.658, and the Cronbach's Alpha if Item Deleted of IVB3, IVC3, IVD2, IVE3 variable are 0.819, 0.786, 0.797, 0.818, respectively, satisfactory inspection, ensure conditions for inclusion in the next model analysis.

The reliability coefficient, FA3 is bring to checks in the Cronbach alpha coefficient for the five construct of Functional Quality 3, Test results: Cronbach alpha coefficient = 0.878 and all the variable in FA3 have coefficients of Corrected item - Total Correlation are greater than 0.3 (Coefficients Corrected Item-Total Correlation of eighth construct of Technical Quality are IVE1 = 0.744, IVE2 = 0.807 and IVE4 = 0.743), and Cronbach's Alpha if Item Deleted of IVE1 = 0.846, IVE2 = 0.787, IVE4 = 0.846, satisfactory inspection, ensure conditions for inclusion in the next model analysis

Theseby, The reliability coefficient, Functional Quality (FQA) is bring to checks in the Cronbach alpha coefficient for the three construct of Functional quality (FQ), Test results: Cronbach alpha coefficient = 0.800 and all the variable in service quality have coefficients of Corrected item - Total Correlation are greater than 0.3, satisfactory inspection, ensure conditions for inclusion in the next model analysis.

3.4.2. Reliability for Technical Quality of Private hospital

The reliability coefficient, Technical Quality is bring to checks in the Cronbach alpha coefficient for the eighth construct of Technical Quality, Test results: Cronbach alpha coefficient = 0.957 and all the variable in service quality have coefficients of Corrected item - Total Correlation are greater than 0.3 (Coefficients Corrected Item-Total Correlation of eighth construct of Technical Quality are IVF1 = 0.837, IVF2 = 0.830, IVF3 = 0.890, IVF4 = 0.875, IVF5 = 0.788, IVF6 = 0.842, IVF7 = 0.842 and IVF8 = 0.812), and Cronbach's Alpha if Item Deleted of IVF1, IVF2, IVF3, IVF4, IVF5, IVF6, IVF7, IVF8 are 0.952, 0.952, 0.948, 0.949, 0.955, 0.952, 0.951, 0.953, respectively, satisfactory inspection, ensure conditions for inclusion in the next model analysis.

3.4.3. Reliability for SERVICE QUALITY (SQ) of Private hospital

The reliability coefficient, Quality service is bring to checks in the Cronbach alpha coefficient for the fourth construct of Service Quality (SQ), Test results: Cronbach alpha coefficient = 0.889 and all the variable in service quality have coefficients of Corrected item - Total Correlation are greater than 0.3 (FA1 = 0.820, FA2 = 0.641, FA3 = 0.734 and TQ = 0.892) and Cronbach's Alpha if Item Deleted of FA1, FA2, FA3, TQ are 0.844, 0.897, 0.876, 0.800, respectively, satisfactory inspection, ensure conditions for inclusion in the next model analysis.

The Dependent variables of Service Quality (SQ) for each independent variable are correlation with each other independent variables, through specific expressions of correlation coefficient as follows: FA1 (0.820), FA2 (0.641), FA3 (0.734) and TQ (0.892) is calibrated (2-tailed) was statistically significant at the 0.01 level. Preliminarily we can conclude the independent variables included in the model can to explain the dependent variable of Patient satisfaction (PS).

3.5. Adjusted research model for Private hospital

Through the above analysis results showed that 6 factors (components) of the original scale service quality after performing factor analysis, 02 factors not achieve that distinction is worth understanding and guarantee, worth four factors distinguish drawn, which were:

Factor 1 (FA1 - Reliability) includes the following 15 variables: IVA1, IVA2, IVA3, IVA4, IVA5, IVB1, IVB2, IVB3, IVC1, IVC2, IVC4, IVD1, IVD3, IVD4, IVD5.

Factor 2 (FA2 - Assurance) includes the following 4 variables: IVB3, IVC3, IVD2, IVE3.

Factor 3 (FA3 - Tangibles) includes the following 3 variables: IVE1, IVE2, IVE4.

Two factor are Responsiveness factor and Embathy factor can theoretically exist, but when applied to the analysis of inpatient Department at Private hospital achieved the

distinction is not clear (it looks almost the same), did not become a separate element should be removed from the model.

Technical quality factor (TQ) after factor analysis, a component is drawn with 8 variables (IVF1, IVF2, IVF3, IVF4, IVF5, IVF6, IVF7, IVF8):

Factor 4 (TQ – Technical Quality) includes the following 8 variables: IVF1, IVF2, IVF3, IVF4, IVF5, IVF6, IVF7, IVF8.

Thus, the initial research model through factor analysis results are adjusted as follows (Table 2):

Table 2: Summary of Hypotheses Findings in Private hospital:

Hypothesis	Result
(H1): There is a relationship between Reliability factor (FA1) and Service quality (SQ)	Supported
(H2): There is a relationship between Assurance factor (FA2) and Service quality (SQ)	Supported
(H3): There is a relationship between Tangibles factor (FA3) and Service quality (SQ)	Supported
(H4): There is a relationship Technical Quality factor (TQ) and Service quality (SQ)	Supported

3.6. Inspection of model service quality research

3.6.1. Correlation analysis (Pearsom coefficient) for Private hospital

Multivariate regression analysis was performed to examine the relationship between the independent variable (Pearson correlation of the FA1, FA2, FA3, and TQ factors are 0.889, 0.736, 0.852, 0.979, respectively) with the dependent variable (Service quality) in research model, correlation is significant at the 0.01 level. Before conducting linear regression analysis, the consideration of linear correlation between the independent variables and the dependent variable between the independent variables together is work to be done and the Pearson correlation coefficient in the matrix system correlation is appropriate to consider this relationship.

The value of the dependent variable and the independent variable is the factor (factor score) was calculated through SPSS factor analysis, is the linear combination of the observed variables in the service quality scale standardized.

3.6.2. Multiple Linear Regression analysis for Private hospital (Pearsom coefficient):

Table 3: Linear regission of Service Quality (SQ) of the Results in the Private hospital Coefficients[e]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	-1.034E-013	.000		.000	1.000		
	FA1	.167	.000	.147	31939718.609	.000	.249	4.020
	FA2	.167	.000	.162	52396326.315	.000	.557	1.796
	FA3	.167	.000	.213	56291877.691	.000	.369	2.709
	TQ	.500	.000	.580	102742350.779	.000	.166	6.018

a. Dependent Variable: SQ

The regression equation best satisfaction of quality of service:

Y = -1.034E-013 + 0.167 * Reliability (FA1) + 0.167 * Assurance (FA2) + 0.167 * Tangible (FA3) + 0.500 * Technical quality (TQ).

Thus, summary of Hypothesis Finding in Private hospital is the initial research model through factor analysis results were adjusted as above (Table 3).

4. Discussion

4.1. Desciptive Statistics for healthcare quality Variables

Six dimensions have mean are high. The result show that Patients feel that the quality of medical services at the private hospital models are pretty good, but still not really good for the perception of the patients using the service at this hospital.[10-11]

4.2. Reliability (Cronbach Alpha) of Variable

As reliability of the instrument helps to provides consistency in the results and the Cronbach alpha is used to measure the reliablity of the data (IVA = 0.882, IVB = 0.871, IVC = 0.845,

IVD = 0.794, IVE = 0.846, IVF = 0.958). Overall Cronbach Alpha of private hospital data long with service quality construct provides values greater than 0.60, as the values of Cronbach Alpha greater than 0.60 is acceptable.[10-11]

Theseby, PS of SQ with 6 dimentions had Cronbach Alpha = 0.939, and 6 dimentions have corrected item – total correlation are high (IVA = 0.797, IVB = 0.832, IVC = 0.862, IVD = 0.722, IVE = 0.901, respectively), and > 0.3; therefore, proves the components and variables in the research model have passed the inspection requirements to continue to introduce the next exploratory factor analysis.[10-11]

4.3. Exploratory Factor Analysis (EFA) for Private hospital

4.3.1. CEA for Functional quality (SERVQUAL) of Private hospital:

- ***Factor analysis discovered 4 EFA with functional quality components (1st Cycle of Factor Analysis):***

After performing factor analysis of 22 variables as above (4 dimension with 22 items), we have 3 elements are drawn as above (FA1, FA2, FA3), we have 3 elements are drawn with KMO > 0.5, and significant < 0.0001. It explained 66.942% of the difference of these variables, the remainder can not be explained by the variables in the analysis. Rotating the factor for three iterations were consistent with the model had buil in the current rearch. Thus, the model was constructed by three major components defined in Tables 2 that was proven to be the most suitable measurement for functional quality in the field of research.[10-11]

The variable transfer factor values are in two different factors as IVB3 variables in factor 1 (0.581) and factor 2 (0.608), IVB4 variables in factor 1 (0.656) and factor 2 (0.567), and IVE3 variables in factor 2 (0.694) and factor 3 (0.524), which shows the correlation of these variables with two factors that are not really explicit. After performing factor rotation, variable coefficients in the larger factors proved it mainly correlated with factors that, therefore, it belongs to that factor.[10-11] IVB3 variable belongs to factor 2, IVB4 variable belongs to factor 1, and IVE3 variable belongs to factor 2. After performing factor analysis with 22 variables as above, we have three elements are drawn:

Factor 1 (FA1 - Reliability) includes the following 15 variables: IVA1, IVA2, IVA3, IVA4, IVA5, IVB1, IVB2, IVB4, IVC1, IVC2, IVC3, IVD1, IVD3, IVD4, IVD5.Factor 2 (FA2 – Assurance) includes the following 4 variables: IVB3, IVC3, IVD2, IVE3. Factor 3 (FA3 - Tangibles) includes the following 3 variables: IVE1, IVE2 and IVE4.

EFA for the first Functional quality (FA1), the second functional quality (FA2), and the third functional qualtiy (FA2) of Private hospital: Continues to performing FA1 (15 variables), FA2 (4 variables), FA3 (3 variables) factor analysis, we have 1 elements are drawn from each factors and abtained results with KMO > 0.5, sig. < 0.0001.[10-11]

- ***Factor analysis discovered 3 EFA for Functional quality (FQA) of Private hospital (2nd Cycle of Factor Analysis):***

Factor analysis discovered EFA with Functional quality components Group: Continues to performing FQA factor group analysis of 3 factor as above (FA1, FA2 and FA3), we have 1 elements are drawn and obtained results with KMO >0.5, sig. < 0.0001. It explained 73.527% of the difference of these variables, the remainder can not be explained by the variables in the analysis. As can be seen from above, the rotation of convergence in three iterations were consistent with the framework the researchers had built in the current research. Thus, the model was constructed by three major components defined in Table 2 that was proven to be the most suitable measurement for functional quality in the field of research.[10-11]

4.3.2. CEA for Technical quality (Technical Quality Care) of Private hospital

Factor analysis discovered 8 EFA with quality components: After performing factor analysis of 8 variables as above, we have 1 elements are drawn as follows with KMO is > 0.5, sig. < 0.0001, the meaning that the sample size was full for the technical factor analysis. The Bartlett was measurement tested for the null hypothesis with the original correlation matrix is an identity matrix. The result showed that the Bartlett test of sphericity with significant < 0.0001. It explained 77.248% of the difference of these variables, the remainder can not be explained by the variables in the analysis.[10-11]

4.3.3. CEA for SERVICE QUALITY

- ***Factor analysis discovered 4 EFA with quality service components:***

After performing factor analysis of Service quality (FA1, FA2, FA3, TQ) with 30 variables as above (22 items of functional quality and 8 items of technical quality), we have 4 elements are drawn as follows with KMO > 0.5, the meaning that the sample size was full for the technical factor analysis. The Bartlett was measurement tested for the null hypothesis with the original correlation matrix is an identity matrix. The result showed that the Bartlett test of sphericity with significant < 0.0001. Therefore suitable to conditions of factor analysis.[10-11]

4 factors (FA1, FA2, FA3, TQ) explained almost 76.548% with variance extracted, the remainder can not be explained by the variables in the analysis.[10-11] The rotation of convergence in 4 iterations that were consistent with the framework the researchers had built in the current research. Thus, the model was constructed by 4 major components defined in Table 2 that was proven to be the most suitable measurement for service quality in the field of research (Completed the demonstration of the component matrix factor rotation and structures of the study).[10-11]

❖ ***After performing factor analysis, we have four elements are drawn:***

Factor 1 (FA1 - Reliability) includes the following 15 variables (IVA1, IVA2, IVA3, IVA4, IVA5, IVB1, IVB2, IVB4, IVC1, IVC2, IVC3, IVD1, IVD3, IVD4, IVD5). Factor 2 (FA2 - Assurance) includes the following 4 variables (IVB3, IVC3, IVD2, IVE3). Factor 3 (FA3 - Tangibles) includes the following 3 variables (IVE1, IVE2, IVE4). Factor 4 (TQ – Technical Quality) includes the following 8 variables (IVF1, IVF2, IVF3, IVF4, IVF5, IVF6, IVF7, IVF8).[10-11]

4.4. Cronbach Alpha of factor and Reliability for SERVICE QUALITY Model of Private hospital

The reliability coefficient of FA1, FA2, FA3 of functional quality (FQA) had Cronbach alpha coefficient = 0.947, 0.846, and 0.878 (> 0.6), respectively; and all the variable in functional quality have coefficients of Corrected item - Total Correlation are greater than 0.3. Continuous, Cronbach alpha coefficient for the three construct of Functional quality (FQ) had Cronbach alpha coefficient = 0.800 (> 0.6) and all the variable in functional quality have coefficients of Corrected item - Total Correlation are greater than 0.3, satisfactory inspection, ensure conditions for inclusion in the next model analysis.

The reliability coefficient, Technical Quality is bring to checks in the Cronbach alpha coefficient for the eighth construct of Technical Quality (TQ) had Cronbach alpha coefficient = 0.957 (> 0.6) and all the variable in service quality have coefficients of Corrected item - Total Correlation are greater than 0.3, satisfactory inspection, ensure conditions for inclusion in the next model analysis.

The reliability coefficient, Quality service is bring to checks in the Cronbach alpha coefficient for the fourth construct of Service Quality (SQ) had Cronbach alpha coefficient = 0.889 (> 0.6) and all the variable in service quality have coefficients of Corrected item - Total Correlation are greater than 0.3 (Cronbach's Alpha if item deleted of FA1, FA2, FA3, TQ are 0.844, 0.897, 0.876, and 0.800, respectively);So, satisfactory inspection, ensure conditions for inclusion in the next model analysis.

4.5. Adjusted research model for Private hospital

Through the above analysis results showed that 6 factors (components) of the original scale service quality after performing factor analysis, 02 factors not achieve that distinction is worth understanding and guarantee, Two factor are Responsiveness factor and Embathy factor can theoretically exist, but when applied to the analysis of inpatient Department at Private hospital achieved the distinction is not clear (it looks almost the same), did not become a separate element should be removed from the model. Thus, worth four factors distinguish drawn, the initial research model through factor analysis results are adjusted as above (Table 3).

4.6. Inspection of model service quality research

4.6.1. Correlation analysis (Pearson coefficient) for Private hospital

Multivariate regression analysis was performed to examine the relationship between the independent variable (Pearson correlation of the FA1, FA2, FA3, and TQ factors are 0.889, 0.736, 0.852, 0.979, respectively) with the dependent variable (Service quality) in research model, correlation is significant at the 0.01 level. Before conducting linear regression analysis, the consideration of linear correlation between the independent variables and the dependent variable between the independent variables together is work to be done and the Pearson correlation coefficient in the matrix system correlation is appropriate to consider this relationship.

The value of the dependent variable and the independent variable is the factor (factor score) was calculated through SPSS factor analysis, is the linear combination of the observed variables in the service quality scale standardized.[10-11]

4.6.2. Multiple Linear Regission analysis (Pearson coefficient)

❖ ***Multiple Linear Regression analysis for Public hospital:***

Performed multivariate regression analysis to examine each specific independent variables: The Reliability (FQA1), Empathy (FQA2), Tangible (IVA3), Technical quality (TQA) affects the quality of service (dependent variable) how.

The model of multivariate linear regression describing the quality of service is:

Service quality = B0 + B1 * Reliability + B2 * Empathy + B3 * Tangible service quality + B4 * Technical quality.

With B1, B2, B3, B4: is the partial regression coefficients.[10-11]

Reliability (FQA1), Empathy (FQA2), Tangible (FQA3), Technical quality (TQA) is the independent variable and the service quality is the dependent variable.

Regression analysis was performed by the method selected by step (stepwise selection). Stepwise regression method turn to another independent variable in the model, step by step. Independent variables or inversely correlated with the dependent variable most will be put into the first equation. If this variable does not satisfy the conditions in this procedure will terminate and no independent variables in the model. If it satisfies the criteria in the following independent variables (the second variable) is inserted, the variables explain most of the change in the dependent variable when combined with the first variable. And so continues. After the first variable is inserted, the computer will consider whether to remove it from the equation based on the standard. After each step, the variables in the equation to be considered for exclusion. The variables are excluded until no variables that satisfy the conditions again. Variable selection procedure will terminate when no longer eligible variables in and out again.

Results of stepwise regression analysis with the standard is the standard PIN = 0.05 and out is Pout = 0.10 that.[10-11]

Four independents standards to ensure to be included in the study model. Four independent variables remaining reliability, Assurance, tangible and technical quality are satisfactory, included in the model to consider.

Multiple regression equations are estimated stepwise method shows the model (Table 3), with the independent variables Reliability, Assurance, tangible and technical quality is the most suitable model to express satisfaction with service quality.

Adjusted R2 coefficient (Adjusted R square) = 1.000. This suggests that the variance between 100.0% satisfaction on service quality is explained by four independent variables, other variables remaining impacts is very low.[10-11]

The regression equation best satisfaction of quality of service:

Y = - 1.034-013 + 0.167 * Reliability (FQA1) + 0.167 * Assurance (FQA2) + 0.167 * Tangible (FQA3) + 0.500 * Technical quality (TQA).

Results of regression models tested showed no multicollinearity phenomenon occurs because the magnification factor variance (Variance Inflation Factor - VIF) of the variables in the model are very low, ranging from 0.275 to 0.323 less than 10 (Table 3).[10-11]

Results of testing statistical F value, the value of sig. = 0.000 shows a linear regression model fit multiple data sets, are used (Table 3).[10-11]

Value sig. of the independent variables assurance, reliability, tangible media and technical quality are less than 0.05 in the model mean (Table 5).[10-11]

Results of regression models tested showed no multicollinearity phenomenon occurs because the magnification factor variance (Variance Inflation Factor - VIF) of the variables in the model are very low, is less than 10 (Table 3).[10-11]

The study results show that; sig. value of Variables are Reliability, Empathy, Tangible and Technical quality with the absolute value of residuals respectively. Thus linear regression model building above can be used.

Test scatter plot between the normalized residuals (Standardized Residual) and standardized predicted values (Standardized predicted value) indicates residues randomly distributed, not form a specific shape (Table 3, Figure 2). Thus, the linear contact and equal variance were met.

Check the histogram of residuals (Figure 2) show approximate distribution of standardized residuals (Average mean = 4.10 and standard deviation Std. Dev. = 0.61 ie close to 1). Therefore, it can be concluded that the normal distribution assumption was not violated.[10-11]

Check items scatter plot between the normalized residuals (Standardized Residual) and standardized predicted values (Standardized predicted value) indicates residues randomly distributed, not form a specific shape (Figure 2). Thus, the linear contact and equal variance were met.

Thus, the regression equation is presented as appropriate. Technical quality factors with regression coefficient is 0.500, Is the most influential part satisfaction of the Services quality. The following factors influence the next level of satisfaction about the quality of the services quality that in turn respond to the regression coefficient; reliability, assurance, and tanggible had the regression coefficient is 0.167.[10-11]

❖ ***Summary of Hypotheses Findings in Private hospital:***

Thus, the initial research model through factor analysis results are adjusted as follow (Table 3, Figure 2):

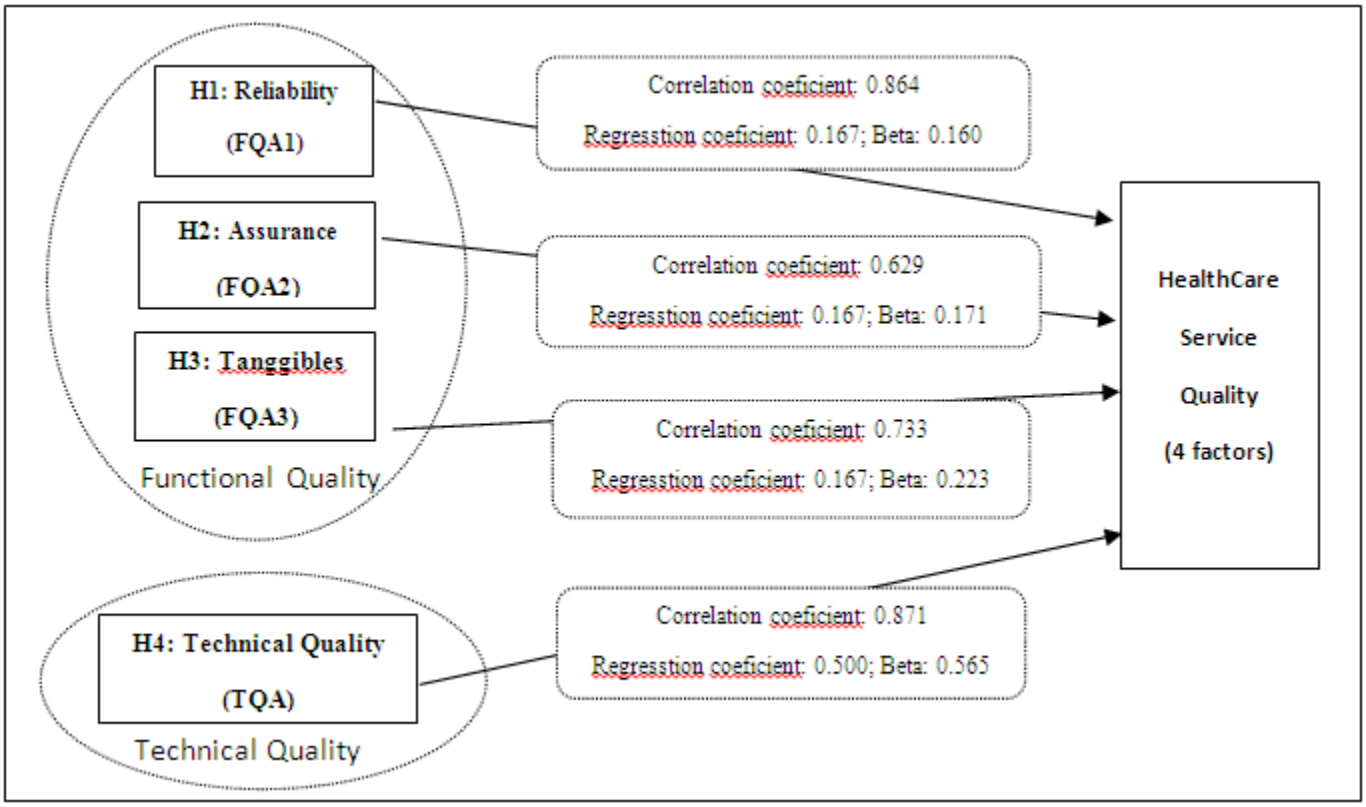

Figure 2: Adjusted research model summary of service quality for inpatient in Private hospitals.

Consequently, the hospital managers can identify the needs and perceptions of patients, technical quality had strongly influence and most important to perception of inpatients (regression coeficient's 0.500), and reliability, assurance, and tangible are also important to inpatients of this hospital; the hospital should be focus on the dimensions; thereby adminstrations can structural adjustment, build-up for development strategy and the maketing strategies to improve service quality to increase patient satisfaction and the tendency to recommend the services of special healthcare providers to others. This type of healthcare quality survey can be used to assessement for quality in hospital as private hospital, general hospital in developing country and the world.

5. Conclusion:

The results of the measurement model shows, and after additional adjustment, the scale will achieve reliability and enable value (the result of this model is SERVQUAL scale of the functional quality and scale of the technical quality of service quality). The model of healthcare service quality in private hospitals is strongly affected by four different factors (three factors are functional quality and one factor's technical quality). Levels of customer satisfaction about healthcare service quality for private hospital is influenced by the SERVQUAL intrument with 3 items (18 scores) are reliability (15 scores), assurance (4 scores), tangible (3 scores) including, and techincal quality is influenced by 8 items (8 scores) responsivenes are ability, accuracy, experience, throughness, training of provides as well as the extent to which they pay attention to detail, avoid mistakes, give good examinations, and clearly explain what is expected of their patients.

The contribution of this report is include a pilot model and the full application of healthcare service quality that highlight all of the structures and substructures of the model research that patients were used for measures of healthcare service quality for private hospitals is one general hospital. The results provide a valid and reliable scale that can be used to measuring healthcare service quality, assessement strong points as well as strong weaks in healthcare services which clients received. This is the first time for the model of this research has been applied in the field of measuring of healthcare service quality in developing country and the World.

References

[1] Andaleeb SS. Service Quality Perceptions and Patient Satisfaction: A study of Hospitals in a Developing Country. Social Science & Medicine. 52 (9): 1359-1370 (2001).

[2] Deardorff AV. (2000). Developing Country Growth and Developed Country Response. Discussion Paper. No. 462 (2000).
[3] Gronroos C. Dimensions of Service Quality, Service Management and Marketing. Lexington Books, Lexington, MA (1990).
[4] Mehdi Zaibaf, et al. Effect of Perceived Service Quality on Customer Satisfaction in Hospitality Industry: Gronroos' Service Quality Model Development. Journal of Hospitality Marketing & Management. 22 (5): 490-504 (2013).
[5] Iwaarden VJ, et al. Applying SERVQUAL to Web sites: an exploratory study. International Journal of Quality & Reliability Management. 20 (8): 919-935 (2003).
[6] Shahin A. SERVQUAL and Model of Service Quality Gaps: A Framework for Determining and Prioritizing Critical Factors in Delivering Quality Services, University of Isfahan, Iran.
[7] Emin B, et Mangold WG. (1992). Adapting the SERVQUAL Scale to Hospital Services: an Empirical Investigation. Health Service Research. 26 (6): 767-780 (2010).
[8] Brysland A., and Curry A. (2001). Service improvements in public service using SERVQUAL", Management Service Quality. Vol.11 (6): 389-401 (2001).
[9] Ware JE, Davies-Avery JA, et Stewart AL. The Measurement and Meaning of Patient Satisfaction: A review of the literature. The Rand Corporation – Santa Monica, California. pp. 6036 - 1997 (2002).
[10] *Khelifa M. Factor Analysis. Zayed University Office of Research SPSS for Windows® 2009 (2009).*
[11] *Khelifa M. Multiple Linear Regression Analysis. Zayed University Office of Research SPSS for Windows®2009 (2009).*