AN EMPIRICAL STUDY ON INTEGRATION OF SERVQUAL AND KANO MODEL FOR MEASURING SERVICE QUALITY OF HOSPITALS IN AHMEDABAD

Ms. Nikita Patel, Ph. D Research Scholar, Ganpat University, Ganpat Vidyanagar, Mehsana – Gozaria Highway, Kherva, Gujarat, India.

Dr. Nishith Kumar H. Bhatt, Associate Professor, S. K. School of Business Management, Hemchandracharya North Gujarat University, Patan, Gujarat, India

ABSTRACT

To survive in this competitive market and to achieve competitive advantage, hospital should continuously measure and improve their service quality which leads to patient satisfaction. Lot of research has been carried out to measure service quality through SERVQUAL or modified SERVQUAL scale. But Literature has explored that SERVQUAL cannot directly relate performance with satisfaction level because it assumes a linear relationship between customer satisfaction and service attribute performance. But the factors that cause dissatisfaction are different from the factors that cause satisfaction. Kano Model can be used to classify service quality attribute based on satisfaction level. This research paper will emphasis on integration of SERVQUAL and Kano model to measure service quality of Private Multispecialty Hospitals in Ahmedabad, Gujarat to find out the major areas for improvement as per the service quality is concerned. Research has identified high service quality gap for the dimensions reliability, responsiveness, assurance and empathy on the other hand tangibility shown least service quality gap. Service quality gap was observed in Must be service quality attributes that shown that hospitals are lacking in proving basic services too. To satisfy patients, Private Multispecialty Hospitals in Ahmedabad should focus more on improving service quality.

Keywords: Hospital Service Quality, SERVQUAL, Kano Model.

Introduction:

Gujarat offers holistic medicinal services and cost effective treatment. Market for tertiary care is expected to grow at a faster rate due to rise in income levels, increasing adoption of health insurance and rise in complex in-patient ailments (heart diseases, kidney ailments, cancer). Upcoming trends in Gujarat state like increasing rate of medical tourism clinical research activities, public private partnership and medical equipment market also boost growth of health care sectors in Gujarat state. This ever increasing growth rate put pressure on hospital to measure and continuously improves health care service quality. Researchers are having opinion that service quality plays an important role in achieving higher patronage, competitive advantage, sustained profitability (Brown, S. W. and Swartz, T. A., 1989; Headly, D. E. and Miller, S. J., 1993), corporate marketing, enhancing financial performance (Buttle, F., 1996). There is direct link between service quality and increased market share, profit and saving, (Devlin, S. J. and Dong, H. K., 1994). The ‘Gap Model’ of service quality was propounded by Parasuraman, A. et al. (1985) to measure service quality gap. As shown in figure 1, model identified following five service quality gaps. These gaps can be major obstacles to deliver a high quality service.

Gap 1: Consumer expectation- Management perception gap
Gap 2: Management perception- Service quality specification gap
Gap 3: Service quality specification- Service delivery gap
Gap 4: Service delivery –External communication gap

1 Industries commissionerate, Government of Gujarat (2014). Healthcare. Gujarat: iINDEXTb.
These four gaps cause a fifth gap that is Gap 5.

Gap 5: Expected- Services- Perceived Services gap

Parsuraman, A. et al. (1988) developed SERVQUAL scale based on five service quality dimensions: Tangibility- Infrastructural aspects of services and aesthetic of personnel, Reliability- Ability to execute services as per the promise, Responsiveness- Eageriness to help customers and providing fast service, Assurance- Trust and confidence generating ability of knowledgeable and courteous employees, and Empathy- Trust and confidence generating ability of knowledgeable and courteous employees. SERVQUAL is concise multi item scale (22 item scale) with good reliability and validity. It is widely adopted approach to measure service quality in both manufacturing and service industry. When necessary it can be modified or supplemented to fit the characteristics of particular service (Parsuraman, A. et al., 1988). This instrument was administered twice to measure expectation and perceptions for each of the five service quality dimensions using seven-point Likert scale ranging from 1 (strongly disagree) to 7 (strongly agree). SERVQUAL is extensively adopted in both private and public service sectors such as retailing, healthcare, education, tourism and hospitality, financial services, B2B, real estate and government as well (Buttle, F., 1996). SERVQUAL provides better understanding about current service quality trends if applied periodically (Parsuraman, A. et al., 1988; Tan, K. C. and Pawitra, T. A., 2001). Areas of excellence and improvement can be identified and priorities through service gap using SERVQUAL. This provides basis for formulating strategy and tactics (Tan, K. C. and Pawitra, T. A., 2001). SERVQUAL assumes a linear relationship between customer satisfaction and service attribute performance but it is not necessary that paying more attention to a particular service attribute may always lead to higher customer satisfaction (Tan, K. C. and Pawitra, T. A., 2001) because the factors that cause dissatisfaction are different from the factors that cause satisfaction (Herzberg et al., 1959). This limitation of SERVQUAL can be overcome using integration of SERVQUAL and Kano Model.

Kano Model- Theory of Attractive Quality

Dr. Noriaki Kano of Tokyo Rika University and his colleagues from Japan in 1984 (Kano et al., 1984) developed Kano Model to categorise the attributes of a product or service, based on how well products or services are able to satisfy customers’ need (Berger et al., 1993; Witell, L. and Lofgren, M., 2007; Chen, Y. H. and Su, C. T., 2006). This model was developed on the basis Herzberg’s ‘Motivator-Hygiene Theory- M-H Theory’ (Herzberg et al., 1959; 1966). This model is also known as ‘Kano’s theory of attractive quality’ (Kano et al., 1984). Professor Kano proposed that sometimes quality attributes may reveal non-linear and two dimensional relationship with customer satisfaction (Kano, N. et al., 1984; Birdog, B. et al., 2009; Witell, L. and Lofgren, M., 2007). Kano’s model has been applied in quality management, product development, strategic management and employee management, business planning and service management (Witell, L. and Lofgren, M., 2007). In service sector, Kano model has been applied to investigate various services such as supermarkets (Ting, S. C. and Chen, C. N., 2002), web page design (Tan K.C. et al., 1999), health-care services (Jane et al, A. C. and Domi ‘nguez, S. M., 2003), financial services (Bhattacharyya, S. K. and Rahman, Z., 2004), and electronic services (Fundin, A. and Nilsson, L., 2003). As shown in the figure 2, Horizontal axis in the Kano diagram express the physical sufficiency of an quality attribute and the vertical axis express the satisfaction with an quality attribute (Kano, N. et al., 1984). Quality attributes were classified in five Categories: “Attractive Quality”, “One-Dimensional Quality”, “Must-be Quality”, “Indifferent Quality” and “Reverse Quality” (Witell, L. and Lofgren, M., 2007).

- ‘Attractive Quality Attribute’: Surprise and delight attributes (Kano, N. et al., 1984). When this quality attributes achieved fully, customer satisfaction increases super linearity with increasing service attribute performance. However, there is no corresponding decrease in customer satisfaction with decrease in performance (Kano, N. et al., 1984, Tan, K. C. and Pawitra, T. A., 2001; Witell, L. and Lofgren, M., 2007). If these attributes delivered properly they lead to satisfaction. These are neither demanded nor normally expected so they are sufficient, but not a necessary condition for satisfaction (Kano, N. et al., 2001; Lilja, J. and Wiklund, H., 2006; Busacca, B. and Padula, G., 2005; Birdog, B. et al., 2009). To get competitive advantage and attract competitors’ customer, ‘Attractive attribute’ works an element for an aggressive marketing strategy (Birdog, B. et al., 2009).

- ‘One-Dimensional Quality Attribute’: They lead to satisfaction when fulfilled and result in dissatisfaction when not fulfilled (Kano, N. et al., 1984; Witell, L. and Lofgren, M., 2007). It explains linear relationship between service attributes and customer satisfaction (Shen, X. X. et al., 2000). These are called spoken needs (Gustafsson, A., 1998) and so they are both a necessary and sufficient condition for customer satisfaction (Busacca, B. and Padula, G., 2005).

- ‘Must-be Quality Attribute’: Customer satisfaction does not increase above neutral level even if these attributes fulfilled fully (Tan, K. C. and Pawitra, T. A., 2001) but result in dissatisfaction when not fulfilled (Kano, N. et al., 1984).

- ‘Indifferent Quality Attribute’: These attributes are neither good nor bad; they do not result in either...
satisfaction or dissatisfaction (Kano, N. et al., 1984; Witell, L. and Lofgren, M., 2007).

- ‘Reverse Quality Attribute’: If these attributes achieved fully, they results in dissatisfaction and vice versa; if not achieved fully results in satisfaction. The reason behind this is not all customers are alike (Kano, N. et al., 1984; Gustafsson, A., 1998; Witell, L. and Lofgren, M., 2007).

Model also proposes that over the time an attribute changes from being ‘Indifferent’, to ‘Attractive’, to ‘One-Dimensional’, and, finally, to being a ‘Must-be’ item so timely and continual development /improvement and introduction of products or services with innovative and novel attributes are important to get competitive advantage (Shen, X. X. et al., 2000; Tan, K. C. and Pawitra, T. A., 2001). Figure 3, 4, 5 and 6 explains four different approaches for classification of quality attributes like ‘Five level Kano Questionnaire’, ‘Three level Kano Questionnaire’, ‘Classification through Direct Question’ and ‘Classification through Dual-Importance Grid’ (Witell, L. and Lofgren, M., 2007).

**Literature Review:**

Healthcare is a typical service that people need but do not necessarily wish for it (Berry, L. L. and Bengdapudi, N., 2007). According to Andaleeb, S. S. (2001), Health care is one of the fastest growing sectors in the service economy due to an aging population, mounting competitive pressures (Pai, Y. P. and Chary, S. T., 2013), increasing consumerism, emerging treatments and technologies (Ludwig-Beymer, P. et al., 1993; O’Connor et al., 2000). Patients and their family must be recognised as consumers in healthcare thus to offer them new products and services, a thorough understanding of their needs and expectations is significantly important (Pai, Y. P. and Chary, S. T., 2013). Translating the patient’s view into actual service offering is one of the ways to make healthcare services more responsive to people’s need (Rao, K. D. et al., 2006). Globally there is a shift towards the private sector from the traditional charity state-run system in the delivery of health services (Marchand, M. and Schroyen, F., 2005). Various studies had been carried out in health care sector to measure service quality through SERVQUAL or modified SERVQUAL (Pai, Y. P. and Chary, S. T., 2013). Table 1 show major studies recently conducted in health care sector. SERVQUAL can be improved by integrating it with Kano Model. In the service industry Kano model has also been applied successfully alone or in integration with other approaches for investigating various services as TV’s and table Clocks (Kano, N. et al., 1984), Skis (Matzler, K. et al., 1996; Matzler, K. and Hinterhuber, H. H., 1998), Web pages (Tan, K. C. et al., 1999), Television (Kano, N., 2001), Tourism (Tan, K. C. and Pawitra, T. A., 2001; Pawitra, T. A. and Tan, K. C., 2003), Education (Emery, C. R. and Tian, R. G., 2002; Hogstrom, C. et al., 2010), Financial services (Bhattacharyya, S. K. and Rahman, Z., 2004), Logistics services (Birdogan, B. et al., 2009) and health care services (Cardero-Amperio, J. et al., 2012; Sulisworo, D. et al., 2012; Momani, A. et al., 2014). It has been also applied in conjunction with SERVQUAL (Bhattacharyya, S. K. and Rahman, Z., 2004; Tan, K. C. and Pawitra, T. A., 2001; Pawitra, T. A. and Tan, K. C., 2003; Birdogan, B. et al., 2009). Few researches had been conducted to further improve SERVQUAL by integrating it with Kano Model as mentioned in Table 2.

**Research Gap:**

It is of utmost importance for hospitals to concern about health care service quality provided by them. To provide best service, hospitals should continuously measure the voice of patients regarding service provided by them and their satisfaction towards the services. Increasing rate of medical tourism, rise in infectious and chronic degenerative diseases and lifestyle-related diseases has put pressure on healthcare service provider to get NABH or NABL accreditation as a basic requirement to become world class. Moreover to imbibe the best global practices in the value chain, there is a moral pressure on health care service providers to provide seamless patient care of highest quality in Gujarat state. To provide seamless patient care and compete in this competitive environment hospital should continuously measure and improve of service quality. Hospitals can measure their own service quality using SERVQUAL. But there is scope for improvement in SERVQUAL by integrating it with Kano model to achieve excellent service quality. Integrated model will help hospitals to relate service quality gap about and satisfaction level. Lots of research has been carried out to measure service quality of hospitals through SERVQUAL or modified SERVQUAL scale. Lack of literature is observed in the area of integration of SERVQUAL and Kano model in Healthcare sector.

**Research Methodology:**

Objective of this research was to measure service quality of Private Multispeciality Hospitals of Ahmedabad, Gujarat, India and to classify service quality attributes using Kano model to relate service quality attributes performance and customer satisfaction. This research began with exploratory research design as its immediate purpose was to explore service quality attributes for further research. For making the study conclusive after exploratory research, descriptive research design-single cross sectional design was used. Both secondary and primary data were collected in this study. Secondary data was collected from books, magazines, journals, newspaper, published
report like economic survey and other government published data and computerized data base like SSRN, Proquest and Emerald. For collecting primary data to achieve research objective, patients were surveyed based on structured questionnaire in Ahmedabad, Gujarat. Target population was patients who were benefiting (continuously being administered at least for three days) / had benefited (within last three months and administered at least for three days) from the service of Private Multispecialty Hospitals. There are approximately 53 Private Multispecialty Hospitals in Ahmedabad. Survey of Total 232 patients from 22 hospitals of Ahmedabad were conducted using non-probability convenience sampling technique. The data collected from the survey was analyzed through reliability statistics, descriptive statistic, paired sample t-test and three levels kano classification for service quality attributes. Total 50 service quality attributes were found out based on literature review to design a questionnaire. Following two research scale were used.

1. Kano three Level Questionnaire approach was used to classify service quality attributes based on following two scales.

   Feeling if service quality attribute available: S-Satisfied, N- Neutral, D- Dissatisfied
   Feeling if service quality attribute not available: S-Satisfied, N- Neutral, D- Dissatisfied

2. SERVQUAL scale as proposed by Parasuraman, A. et al. (1988) was adapted and modified in this research to develop structured questionnaire based on five service quality dimensions Tangibility, Reliability, Responsiveness, Assurance and Empathy. Five point likert scale was used to measure expectation and perception of patient’s about service quality attributes. Once the questionnaire was constructed, a small pilot study was conducted among 50 respondents bearing the same demographic profile as the final sample of the study. Their feedback and comments are incorporated in the study.

Findings and Discussion:

Respondent’s Profile: Table 3 explains detail respondent profile.

Reliability of scale: Reliability analysis allows a researcher to determine the extent to which a scale produces consistent results, if the measurements are repeated. Cronbach’s alpha is a statistic used to determine the internal consistency. As shown in Table 4 Cronbach’s alpha for all five dimensions of four different measure of patient’s questionnaire were greater than 0.7 indicating that the construct was reliable.

Kano classification: As shown in Table 5 service quality attributes were classified on the basis of three level Kano questionnaire using mode value. Table 5 shows classification of total 50 service quality attributes in different Kano category. From total 50 service quality attributes 13 service attributes were classified as ‘Must be’ category, 34 service attributes were classified as ‘One dimensional’ category and 3 service attributes were classified as ‘Attractive’ category.

Gap analysis: Paired sample t-test was carried out to find out P-E gap for each service quality attribute. As per the table 6 there is no significant P-E gap was observed for five Service quality attributes “uniform /professional appearance of staff”, ‘laundry facilities available within the premises’, ‘clean drinking water’, ‘well furnished/decorated/ventilated/clean wards’ and ‘adequate, comfortable and clean bathrooms and toilets’ because their p-value as per the paired sample t-test was greater than 0.05. As per the paired sample t-test, p-value of rest of other service quality attributes was less than 0.05 which shows significant P-E gap, so hospital should try to overcome this service quality gap. As per Table 7 P-E gap was observed for all five service quality dimensions. Tangibility shows least gap which proves that Private Multispecialty Hospital of Ahmedabad are good at tangibility aspects but these tangibility aspects cannot be ignored as some of the service quality attributes related to tangibility aspects are falling in ‘Must be’ category. Research found that hospitals are lacking in providing other four service quality dimensions like reliability, responsiveness, assurance and empathy. Highest service quality gap was observed for assurance aspect of hospital service.

Integration of SERVQUAL and Kano model: Table 8 shows integration of SERVQUAL and Kano model for service quality attribute which shows significant P-E gap. The table shows the P-E gap with its classification in Kano category.

‘Attractive service quality attribute’ which shows highest service quality gap was ‘Willingness of hospital personnel to help patients (Responsiveness)’. ‘Blood bank within the premises (Tangibility)’ and ‘Fixing operation timings according to requirement (Empathy)’ also shows service quality gap in this category. These service quality attribute create delight for patient. When above mentioned attractive quality attribute are fully provided by Private Multispecialty Hospital, patient satisfaction increases super linearly with increasing service quality attribute performance. There is, however, no corresponding decrease in patient satisfaction with decrease in such service quality attribute performance. These service quality attributes are neither demanded nor normally expected, but when properly delivered, they bring satisfaction. So they are desirable, but not a necessary condition for satisfaction. To achieve competitive advantage, Attractive service quality attribute can be used as an element of an aggressive marketing strategy by private multispecialty hospital.

‘Must be service quality attribute’ are taken for granted when fulfilled but result in dissatisfaction when not provided by private multispecialty hospital. However patient satisfaction does not increase above neutral level even if these service qualities attributes.
are provided fully. These service quality attributes are generally expected by patients' and they view them as basic, so it is possible that they are not going to tell hospital about these service quality attributes when asked about their expected quality attribute. Thus it is compulsory for every Private Multispecialty Hospital in Ahmedabad to fulfill ‘Must be’ services in their organisation. ‘Must be service quality attribute’ which shows highest service quality gap were ‘Provide all the required information and instructions regarding admission, Treatment, and discharge clearly to patients and attendants (Reliability)’, ‘Error free and fast retrieval of documents (Reliability) ’, ‘Fast and Computerized registration and billing procedures (Tangibility)’, ‘Pharmacy within the premises (Tangibility)’, ‘Pathology laboratory and or imaging centre within the premises (Tangibility)’, ‘Canteen with hygienic food (Tangibility)’, ‘Continuous electricity and water supply (Tangibility)’, ‘Staff with appropriate name badges (Tangibility)’ and ‘Promotional information material (Tangibility)’. Service quality attributes having Tangibility service aspects observed least service quality gap but as they are classified as ‘Must be’ category each and every hospital must have these attributes.

All the service quality attributes other than above mentioned ‘Attractive’ and ‘Must be’ service quality attributes were classified in ‘One Dimensional’ category. These service quality attribute result in satisfaction when fulfilled and result in dissatisfaction when not fulfilled. There is a linear relationship between service quality attribute and patient satisfaction. They are explicit and are ones with which hospitals can compete and so they are both a necessity as well as a primary condition for patient satisfaction. ‘One dimensional’ service quality attribute which observed highest service quality gap was ‘Doing correct diagnosis right at the first time (Reliability)’; ‘Feeling safe regarding cost of treatment and medicines (Assurance)’; ‘Consistency of charges (Empathy)’; ‘Keeping the patients informed and listening to them (Empathy)’ and ‘Understanding the specific needs of the patients (Empathy)’. As this service attributes are more important and leads to dissatisfaction of patient if not delivered, hospitals should try to improve quality of these service attributes on continuous basis. ‘One dimensional service quality attribute’ having tangibility aspects observed least service quality gap which shows that most of the hospital are satisfactorily performing in this aspects.

**Conclusion:**

This study puts forward that patients define hospital service quality in terms of five service quality dimensions like Tangibility, Reliability, Responsiveness, Assurance and Empathy. Through this study SERVQUAL appears to be a consistent and reliable instrument to measure and find out areas for attention to improve service quality of Private Multispecialty Hospital in Ahmedabad city. The negative SERVQUAL Gap between perception and expectation across all the dimensions clearly shows that there is an opportunity for improving service quality in Private Multispecialty Hospital in Ahmedabad city. Highest service quality gap was observed for the aspect Assurance while the least gap was observed for dimension Tangibility which indicates that most of the Private Multispecialty Hospitals in Ahmedabad city are performing satisfactorily on Tangibility aspect and not providing satisfactory service for the services related to assurance aspect. While framing strategy, Private Multispecialty Hospital of Ahmedabad should focus more on ‘Attractive service quality attribute’ to achieve competitive advantage. It is compulsory for each and every hospital to provide highest quality of services which are classified as ‘Must be’ category because these are the basic need of Patients. As service quality gap was observed for all one dimensional service quality attributes, hospitals should try to continuously improve these service quality attributes to increase the satisfaction level of patient and reduce the gap between perception and expectation.

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APPENDIX

Figure 1: The Gap Model

Source: Reproduced from Bedi (2011)²

Figure 2: The Kano Diagram

Source: Reproduced from Berger, C., et al. (1993)³

Figure 3: Five Level Kano Questionnaire

If you can order cinema tickets online, how do you feel?

| (Functional Form) | (Dysfunctional Form) |
|-------------------|----------------------|
| 1. I like it that way. | 1. I like it that way. |
| 2. I was expected to be that way. | 2. I was expected to be that way. |
| 3. I am neutral. | 3. I am neutral. |
| 4. I can accept it to be that way. | 4. I can accept it to be that way. |
| 5. I dislike it that way. | 5. I dislike it that way. |

Bedi, K. (2011). *Quality Management*. New Delhi, India: Oxford University Press.

Berger, C., Blauth, R., Boger, D., Bolster, C., Burchill, G., DuMouchel, W., et al. (1993). "Kano's method for understanding customer-defined quality". *The centre for quality management Journal*, 2 (4), 2-36.
Figure 4: Classifications through Three Level Kano Questionnaire

Source: Reproduced from Witell and Lofgren (2007)

Witell, L., & Lofgren, M. (2007). Classification of quality attributes. Managing Service Quality, 17 (1), 54-73.
Figure 5: Classifications through Direct Question

Source: Reproduced from Witell and Lofgren (2007)\textsuperscript{5}

Witell, L., & Lofgren, M. (2007). Classification of quality attributes. Managing Service Quality, 17 (1), 54-73.

Source: Reproduced from Witell & Lofgren (2007)\textsuperscript{6}

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\textsuperscript{5}Witell, L., & Lofgren, M. (2007). Classification of quality attributes. Managing Service Quality, 17 (1), 54-73.

\textsuperscript{6}Witell, L., & Lofgren, M. (2007). Classification of quality attributes. Managing Service Quality, 17 (1), 54-73.
Table 1: Literature Review of SERVQUAL

| Author                  | Sample size | Sampling Technique | Research Instrument | Scale                          | Final Dimensions with its Reliability                                                                 |
|-------------------------|-------------|--------------------|---------------------|-------------------------------|--------------------------------------------------------------------------------------------------------|
| Lim, P. C., & Tang, N.  | 252         | Convenience sampling | Questionnaire       | 25 items; P-E Score           | Tangibles(5), Reliability (5), Responsiveness (4), Assurance (4), Empathy (4), Accessibility and affordability (3) R- 0.71 to 0.81 |
| (2000) Singapore        |             |                    | Gap Score            | Five point likert scale       |                                                                                                                                                       |
| Sohail, M. S            | 150         | Mailed Questionnaire| EFA and CFA         | 15 items; P-E Score           | Tangibles(4), Reliability (2), Responsiveness (2), Assurance (4), Empathy (3) R- 0.6321 to 0.8669     |
| (2003) Malaysia         |             |                    |                     | Five point likert scale       |                                                                                                                                                    |
| Kilbourne, W. E. et al. | 195-US ,99-UK| Questionnaire      | CFA                 | 22 items; P score             | Tangibles(3), Reliability (3), Responsiveness (3), Empathy (4) R- US- 0.7 to 0.87 R-UK- 0.6 to 0.76    |
| (2004) USA and UK       |             |                    |                     | Seven point likert scale      |                                                                                                                                                    |
| Kara, A. et al.         | 139         | Questionnaire      |                     | 34 items; P-E Score           | Tangibles(9), Reliability (5), Responsiveness (8), Assurance (5), Empathy (2), Courtesy (5)                                                      |
| (2005)                  |             |                    |                     |                               |                                                                                                                                                    |

Source: Reproduced from Witell & Lofgren (2007)
| Author | Sample size | Research Instrument | Data Analysis | Scale | Final Dimensions with its Reliability |
|--------|-------------|---------------------|---------------|-------|---------------------------------------|
| Turkey | EFA, SEM    | Seven point likert scale | R-0.6797 to 0.8652 |
| Rao, K. D. et al. (2006) India | 2480 Convenience sampling Questionnaire EFA | 23 items; P score five point likert scale | Medicine Availability (2), Medical Information (3), Staff Behavior (2), Doctor Behavior (5), Clinic Infrastructure (4) R-0.7 to 0.88 |
| Rohini, R., & Mahadevappa, B. (2006) India, Bangalore | 500 Stratified random sampling Questionnaire EFA, ANOVA | 22 items; P-E Score Seven point likert scale | Tangibles(4), Reliability (5), Responsiveness (4), Assurance (4), Empathy (5) R-0.884 to 0.934 |
| Bakar, C. et al. (2008) Turkey | 472 Questionnaire Gap Score | 15 items; P-E Score Five point likert scale | Tangibles(3), Reliability (3), Responsiveness (3), Assurance (4), Empathy (2) R-0.89 to 0.96 |
| Duggirala, D. et al. (2008) India | 100 mail Questionnaire Gap score CFA | 86 items, P-score, Seven point likert scale | Infrastructure, personal quality, process of clinical care, administrative process, safety indicator, overall experience of medical care, social responsibility R-0.775 to 0.906 |
| Ramsaran-Fowdar, R. (2008) Mauritius | 260 Convenience sampling Questionnaire EFA | 47 items; P-score, Seven point likert scale | Tangibility, Reliability, Responsiveness, Assurance/empathy, Core medical services/professionalism/skill/competence, equipment and records, Records of medical history R-0.72 to 0.97 |
| Karassavidou, E. et al. (2009) North Greece | 137 Questionnaire EFA | 26 items; P-E Score Seven point likert scale | Human aspects (16), Physical environment and infrastructure (7), Access (2) R-0.758 to 0.996 |
| Aagja, P. J., & Garg, R. (2010) India, Ahmedabad | 201- scale development 200- scale validation Convenience sampling questionnaire EFA and CFA | 75 items; P-E Score Seven point likert scale | Admission, Medical Services, Overall service, discharge, social responsibility R-0.5880 to 0.8904 |
| Butt, M. M., & Run, E. C. (2010) Malaysia | 340 Random sampling questionnaire Correlation, EFA, CFA | 17 items, P-E Score Seven point likert scale | Tangibles(3), Reliability(4), Responsiveness(4), Assurance(3), Empathy(3) |
| Narang, R. (2010) India, Lucknow | 500 Questionnaire EFA | 20 items; P-score, five point likert scale | Human Personal Practices and Conduct(6), Adequacy of resources and services (5), Health care delivery (5), Access to services (4) R-0.325 to 0.789 |
| Aaron A. A. and Roger A. A (2013) Ghana | 250 Questionnaire t-measures and factor analysis | 22 items; P-E Score five point likert scale | Tangibles(4), Reliability (5), Responsiveness (4), Assurance (4), Empathy (5) R-0.80 to 0.84 |
| Olgun K., et al. (2014) Turkey | 369 Questionnaire SEM, CFA | 21 items; P-score, five point likert scale | Tangibility (6), Assurance (4), Empathy (2), Reliability (3), Responsiveness (3), overall satisfaction, word of mouth, repurchase intention R-0.70 to 0.86 |
### Table 2: Literature Review of integration of SERVQUAL and Kano Model

| Author                        | Research Industry                  | Integrated Model                        | Classification of Quality Attributes               |
|-------------------------------|------------------------------------|-----------------------------------------|---------------------------------------------------|
| Pawitra, T. A., & Tan, K. C. (2001; 2003) | Tourism Singapore                  | Kano, SERVQUAL & QFD                    | Five Level M, O, A                                |
| Bhattacharyya, S. K., & Rahman, Z. (2004) | Bank Services                      | Kano and SERVQUAL                       | Basic, performance, Excitement                    |
| Birdogon, B. et al. (2009)     | Logistics services Turkey          | Kano, SERVQUAL and QFD                  | Five Level A, M, O, I, R, Q                       |
| Sulisworo, D. et al. (2012)    | Healthcare Service private hospital in Indonesia | Kano and SERVQUAL                       | Five Level A, M, O, I, R, Q                       |

### Table 3: Respondent Profile

| Demographic variables | Category                          | Frequency | %  |
|-----------------------|-----------------------------------|-----------|----|
| Age                   | 18-33                             | 53        | 22.8 |
|                       | 34-49                             | 69        | 29.7 |
|                       | 50-65                             | 77        | 33.2 |
|                       | + 66                              | 33        | 14.2 |
| Gender                | Male                              | 149       | 64.2 |
|                       | Female                            | 84        | 35.8 |
| Marital Status        | Married                           | 195       | 84.1 |
|                       | Unmarried                         | 37        | 15.9 |
| Education             | No formal Education               | 6         | 2.6 |
|                       | Primary School                    | 44        | 19.0 |
|                       | Secondary/Higher secondary school | 47        | 20.3 |
|                       | Graduates/Diploma                 | 62        | 26.7 |
|                       | Post Graduates                    | 53        | 22.8 |
|                       | Professional Course               | 20        | 8.6 |
| Occupation            | Student                           | 17        | 7.3 |
|                       | House wife                        | 32        | 13.8 |
|                       | Farmer                            | 13        | 5.6 |
|                       | Businessman                       | 47        | 20.3 |
|                       | Government Employee               | 32        | 13.8 |
|                       | Private Employee                  | 54        | 23.3 |
|                       | Retired Pensioner                 | 11        | 4.7 |
|                       | Retired Non Pensioner             | 26        | 11.2 |
| No. of visit in a year | One                               | 99        | 42.7 |
|                       | Two                               | 69        | 29.7 |
|                       | Three                             | 42        | 18.1 |
|                       | Four                              | 10        | 4.3 |
|                       | Five and More                     | 12        | 5.2 |
| Medical Insurance Policy| Yes                              | 122       | 52.6 |
|                       | No                                | 110       | 47.4 |
| If yes                | Cashless                          | 86        | 37.1 |
|                       | Reimbursement                     | 36        | 15.5 |
| Type of Medical Insurance Policy | Corporate                      | 32        | 13.8 |
|                       | Personal                          | 90        | 38.8 |
| Yearly Household Income| 2,00,000                         | 37        | 15.9 |
|                       | 2,00,001-4,00,000                 | 72        | 31.0 |
|                       | 4,00,001-6,00,000                 | 71        | 30.6 |
|                       | 6,00,001-8,00,000                 | 31        | 13.4 |
|                       | 8,00,001                          | 21        | 9.1 |
### Table 4: Reliability Statistics- Cronbach's alpha

| Dimension       | Expectation | Perception | Feeling if Service quality attribute |
|-----------------|-------------|------------|---------------------------------------|
|                 |             |            | Available | Not available |
| Tangibility     | 0.876       | 0.929      | 0.914     | 0.823         |
| Reliability     | 0.749       | 0.918      | 0.736     | 0.764         |
| Responsiveness  | 0.729       | 0.921      | 0.711     | 0.700         |
| Assurance       | 0.821       | 0.924      | 0.760     | 0.774         |
| Empathy         | 0.820       | 0.937      | 0.701     | 0.777         |

### Table 5: Service Quality Classification based on Three Level Kano Questionnaire

| Dimension | Service Quality Attributes                                                                 |
|-----------|-------------------------------------------------------------------------------------------|
| TA1       | All staff members with uniform/professional appearance of staff                           |
|           | Feeling if Service quality attribute available Mode Value: 2.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: M                                                                          |
| TA2       | Staff with appropriate name badges                                                        |
|           | Feeling if Service quality attribute available Mode Value: 2.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: M                                                                          |
| TA3       | Fast and Computerized registration and billing procedures                                 |
|           | Feeling if Service quality attribute available Mode Value: 2.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: M                                                                          |
| TA4       | Pathology laboratory and or imaging centre within the premises                           |
|           | Feeling if Service quality attribute available Mode Value: 2.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: M                                                                          |
| TA5       | Blood bank within the premises                                                           |
|           | Feeling if Service quality attribute available Mode Value: 1.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 2.00                      |
|           | Kano Category: A                                                                          |
| TA6       | Pharmacy within the premises                                                             |
|           | Feeling if Service quality attribute available Mode Value: 2.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: M                                                                          |
| TA7       | Easily accessible Location of hospital                                                    |
|           | Feeling if Service quality attribute available Mode Value: 1.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: O                                                                          |
| TA8       | Latest devices, technologies and medical equipments                                       |
|           | Feeling if Service quality attribute available Mode Value: 1.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: O                                                                          |
| TA9       | Systematic layout of Hospital departments (easier for the patients to access services especially for physically challenged, elderly & emergency patients) |
|           | Feeling if Service quality attribute available Mode Value: 1.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: O                                                                          |
| TA10      | Proper safety and comfort measures (e.g: handrails in aisles, rooms and bathrooms, ramps suitably designed for wheelchairs and stretchers, elevators and spacious corridors) |
|           | Feeling if Service quality attribute available Mode Value: 1.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: O                                                                          |
| TA11      | Continuous electricity and water supply                                                   |
|           | Feeling if Service quality attribute available Mode Value: 2.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: M                                                                          |
| TA12      | Canteen with hygienic food                                                               |
|           | Feeling if Service quality attribute available Mode Value: 2.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: M                                                                          |
| TA13      | Laundry facilities available within the premises                                         |
|           | Feeling if Service quality attribute available Mode Value: 2.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: M                                                                          |
| TA14      | Good Housekeeping and sanitation facilities                                                |
|           | Feeling if Service quality attribute available Mode Value: 1.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: O                                                                          |
| TA15      | Comfortable conditions such as temperature, ventilation, and odour                        |
|           | Feeling if Service quality attribute available Mode Value: 1.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: O                                                                          |
| TA16      | Clean drinking water                                                                     |
|           | Feeling if Service quality attribute available Mode Value: 2.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: M                                                                          |
| TA17      | Ambulance services with minimal cost                                                       |
|           | Feeling if Service quality attribute available Mode Value: 1.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: O                                                                          |
| TA18      | Promotional brochures, service tracking documents etc.                                    |
|           | Feeling if Service quality attribute available Mode Value: 2.00                          |
|           | Feeling if Service quality attribute not available Mode Value: 3.00                      |
|           | Kano Category: M                                                                          |

**Tangibility**
| Dimension | Service Quality Attributes                                                                 | Feeling if Service quality attribute available Mode Value | Feeling if Service quality attribute not available Mode Value | Kano Category |
|-----------|------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------|---------------|
| TA1 9     | Well furnished, decorated, well ventilated and clean wards                                | 2.00                                                     | 3.00                                                       | M             |
| TA2 0     | Adequate, comfortable and clean waiting rooms                                             | 1.00                                                     | 3.00                                                       | O             |
| TA2 1     | Adequate, comfortable and clean clinical and diagnostic test rooms                         | 1.00                                                     | 3.00                                                       | O             |
| TA2 2     | Adequate, comfortable and clean pre-operative and post-operative (or patient/resident ward) rooms | 1.00                                                     | 3.00                                                       | O             |
| TA2 3     | Adequate, comfortable and clean intensive care units                                      | 1.00                                                     | 3.00                                                       | O             |
| TA2 4     | Adequate, comfortable and clean bathrooms and toilets                                     | 1.00                                                     | 3.00                                                       | O             |
| RI1       | Provides services by a certain date as per the promises (e.g. Test, follow-up checks, surgeries etc...) | 1.00                                                     | 3.00                                                       | O             |
| RI2       | Problem solving with sincere interest (Registration, calling a concerned doctor to attend the case etc...) | 1.00                                                     | 3.00                                                       | O             |
| RI3       | Provides services like emergency care at the time they promise                              | 1.00                                                     | 3.00                                                       | O             |
| RI4       | Provides services like casual services at the time they promise                             | 1.00                                                     | 3.00                                                       | O             |
| RI5       | Doing correct diagnosis right at the first time                                           | 1.00                                                     | 3.00                                                       | O             |
| RI6       | Services provided at appointed time                                                        | 1.00                                                     | 3.00                                                       | O             |
| RI7       | Error free and fast retrieval of documents                                                 | 2.00                                                     | 3.00                                                       | M             |
| RI8       | Provide all the required information and instructions regarding admission, Treatment, and discharge clearly to patients and attendants | 2.00                                                     | 3.00                                                       | M             |
| RI9       | Availability of related medical and paramedical facilities                                 | 1.00                                                     | 3.00                                                       | O             |
| RE1       | Accurate information regarding when services are to be provided by hospital personnel (e.g admissions, ward facility, visiting hours etc…) | 1.00                                                     | 3.00                                                       | O             |
| RE2       | Prompt services to patients by hospital personnel (e.g. Good reception, housekeeping, nursing, speed and ease of admissions and discharge) | 1.00                                                     | 3.00                                                       | O             |
| RE3       | Willingness of hospital personnel to help patients (ever smiling, kind hearted staff)      | 1.00                                                     | 2.00                                                       | A             |
| RE4       | Availability of hospital personnel to respond to patients’ requests always (attending immediately) | 1.00                                                     | 3.00                                                       | O             |
| Dimension | Service Quality Attributes                                                                 | Feeling if Service quality attribute available Mode Value | Feeling if Service quality attribute not available Mode Value | Kano Category |
|-----------|--------------------------------------------------------------------------------------------|----------------------------------------------------------|------------------------------------------------------------|---------------|
|           | whenever called)                                                                             |                                                          |                                                            |               |
| Assurance | AS1 Confidence generating behavior of hospital personnel. (Convincing briefing by specialist, doctors, and nurses) | 1.00                                                     | 3.00                                                       | O             |
|          | AS2 Feeling safe while dealing with hospital as per the cost of treatment is concerned       | 1.00                                                     | 3.00                                                       | O             |
|          | AS3 Feeling safe while dealing with hospital as per medicines are concerned                   | 1.00                                                     | 3.00                                                       | O             |
|          | AS4 Feeling safe while dealing with hospital as per trust with the personnel etc. Is concerned | 1.00                                                     | 3.00                                                       | O             |
|          | AS5 Hospital personnel treat their patients with courtesy (patient treated with dignity and respect, impartial treatment, sympathetic approach etc...) | 1.00                                                     | 3.00                                                       | O             |
|          | AS6 Enough Knowledge of hospital personnel to answer patients questions (e.g. Thoroughness of medical conditions, proper advice in their respective areas etc...) | 1.00                                                     | 3.00                                                       | O             |
| Empathy  | EM1 Individual attention given to the patient by hospital. (e.g. Bed side care, proper diet requirement, politeness of physicians, nurses and other staff) | 1.00                                                     | 3.00                                                       | O             |
|          | EM2 Convenient operating hours for e.g. 24 hours service facility                            | 1.00                                                     | 3.00                                                       | O             |
|          | EM3 Fixing the operation timings according to requirement                                   | 1.00                                                     | 2.00                                                       | A             |
|          | EM4 Good sympathetic care                                                                   | 1.00                                                     | 3.00                                                       | O             |
|          | EM5 Consistency of charges                                                                   | 1.00                                                     | 3.00                                                       | O             |
|          | EM6 Understanding the specific needs of the patients. (e.g. Receiving, investigating and sending them to specific department for treatment) | 1.00                                                     | 3.00                                                       | O             |
|          | EM7 Keeping the patients informed and listening to them (e.g. Operations details, explaining nutritional needs, pre-operative and post-operative care) | 1.00                                                     | 3.00                                                       | O             |

**Note:** 1- Satisfied, 2-Neutral, 3- Dissatisfied  
A- Attractive service quality attributes, O- One Dimensional service quality attributes, M- Must be service quality attributes
Table 6: Service Quality Gap Analysis

| Paired Samples Test | Paired Differences (Perception-Expectation Gap) Mean Difference | t     | df | Sig. (2-tailed) p value |
|---------------------|---------------------------------------------------------------|-------|----|------------------------|
| Pair 1              | TAD1 - TAA1                                                  | 0.1810|    |                        |
| Pair 2              | TAD2 - TAA2                                                  | 0.2284**| 1.7962| 231          | 0.0738* |
| Pair 3              | TAD3 - TAA3                                                  | -0.7888| -2.2411| 231      | 0.0260 |
| Pair 4              | TAD4 - TAA4                                                  | -0.5345| -7.6043| 231      | 0.0000 |
| Pair 5              | TAD5 - TAA5                                                  | -0.8103| -10.3009| 231     | 0.0000 |
| Pair 6              | TAD6 - TAA6                                                  | -0.5991| -7.6617| 231     | 0.0000 |
| Pair 7              | TAD7 - TAA7                                                  | -0.7241| -8.8066| 231     | 0.0000 |
| Pair 8              | TAD8 - TAA8                                                  | -1.0690| -12.9194| 231   | 0.0000 |
| Pair 9              | TAD9 - TAA9                                                  | -0.7457| -9.5029| 231    | 0.0000 |
| Pair 10             | TAD10 - TAA10                                                | -1.0345| -12.8427| 231    | 0.0000 |
| Pair 11             | TAD11 - TAA11                                                | -0.1983| -2.6288| 231    | 0.0091 |
| Pair 12             | TAD12 - TAA12                                                | -0.4310| -4.3226| 231    | 0.0000 |
| Pair 13             | TAD13 - TAA13                                                | 0.0776| 0.7842| 231    | 0.4337* |
| Pair 14             | TAD14 - TAA14                                                | -0.6034| -7.5593| 231    | 0.0000 |
| Pair 15             | TAD15 - TAA15                                                | -0.7500| -9.3409| 231    | 0.0000 |
| Pair 16             | TAD16 - TAA16                                                | 0.0172| 0.2823| 231    | 0.7780* |
| Pair 17             | TAD17 - TAA17                                                | 0.1767**| 2.2667| 231    | 0.0243 |
| Pair 18             | TAD18 - TAA18                                                | 0.3879**| 3.7384| 231    | 0.0002 |
| Pair 19             | TAD19 - TAA19                                                | -0.1466| -1.6654| 231    | 0.0972* |
| Pair 20             | TAD20 - TAA20                                                | -0.4440| -5.8068| 231    | 0.0000 |
| Pair 21             | TAD21 - TAA21                                                | -0.7629| -9.8431| 231    | 0.0000 |
| Pair 22             | TAD22 - TAA22                                                | -0.6466| -8.3800| 231    | 0.0000 |
| Pair 23             | TAD23 - TAA23                                                | -1.0431| -13.9054| 231   | 0.0000 |
| Pair 24             | TAD24 - TAA24                                                | -0.0776| -0.9182| 231    | 0.3594* |
| Pair 25             | RID1 - RIA1                                                  | -1.4181| -16.1260| 231   | 0.0000 |
| Pair 26             | RID2 - RIA2                                                  | -1.6164| -19.2750| 231   | 0.0000 |
| Pair 27             | RID3 - RIA3                                                  | -1.7802| -21.6070| 231   | 0.0000 |
| Pair 28             | RID4 - RIA4                                                  | -1.2802| -13.6590| 231   | 0.0000 |
| Pair 29             | RID5 - RIA5                                                  | -2.0000| -19.9610| 231   | 0.0000 |
| Pair 30             | RID6 - RIA6                                                  | -1.2845| -14.0930| 231   | 0.0000 |
| Pair 31             | RID7 - RIA7                                                  | -1.4526| -16.0770| 231   | 0.0000 |
| Pair 32             | RID8 - RIA8                                                  | -1.5776| -16.4550| 231   | 0.0000 |
| Pair 33             | RID9 - RIA9                                                  | -1.3750| -15.8290| 231   | 0.0000 |
| Pair 34             | RED1 - REA1                                                  | -1.4957| -16.2860| 231   | 0.0000 |
| Pair 35             | RED2 - REA2                                                  | -1.7155| -20.2340| 231   | 0.0000 |
| Pair 36             | RED3 - REA3                                                  | -1.8621| -22.0100| 231   | 0.0000 |
| Pair 37             | RED4 - REA4                                                  | -1.6681| -18.8110| 231   | 0.0000 |
| Pair 38             | ASD1 - ASA1                                                  | -1.8190| -18.8240| 231   | 0.0000 |
| Pair 39             | ASD2 - ASA2                                                  | -1.9612| -19.4540| 231   | 0.0000 |
| Pair 40             | ASD3 - ASA3                                                  | -1.9440| -19.0810| 231   | 0.0000 |
| Pair 41             | ASD4 - ASA4                                                  | -1.5000| -15.3460| 231   | 0.0000 |
| Pair 42             | ASD5 - ASA5                                                  | -1.6078| -15.6270| 231   | 0.0000 |
| Pair 43             | ASD6 - ASA6                                                  | -1.6983| -18.1560| 231   | 0.0000 |
| Pair 44             | EMD1 - EMA1                                                  | -1.6207| -17.7930| 231   | 0.0000 |
| Pair 45             | EMD2 - EMA2                                                  | -1.2457| -14.8130| 231   | 0.0000 |
| Pair 46             | EMD3 - EMA3                                                  | -0.7500| -8.4770| 231    | 0.0000 |
| Pair 47             | EMD4 - EMA4                                                  | -1.4785| -16.9880| 231    | 0.0000 |
| Pair 48             | EMD5 - EMA5                                                  | -1.9440| -17.6210| 231    | 0.0000 |
| Pair 49             | EMD6 - EMA6                                                  | -1.8233| -18.8810| 231    | 0.0000 |
| Pair 50             | EMD7 - EMA7                                                  | -1.9310| -20.9600| 231    | 0.0000 |

* Service quality attributes whose p-value as per the paired sample t-test was greater than 0.05 so there is no significant gap between perception and expectation ** Service quality attributes which shows positive Perception-Expectation Gap but their p-value as per the paired sample t-test was lesser than 0.05 so there is significant gap between perception and expectation
Table 7: Gap Analysis P-E Gap

| Dimensions    | Perception Mean Score | Expectation Mean Score | P-E Gap    |
|---------------|------------------------|------------------------|------------|
| Tangibility   | 3.7532                 | 4.1841                 | -0.4309    |
| Reliability   | 2.8482                 | 4.3798                 | -1.5316    |
| Responsiveness| 2.6422                 | 4.3276                 | -1.6854    |
| Assurance     | 2.7282                 | 4.4842                 | -1.7560    |
| Empathy       | 2.6761                 | 4.218                  | -1.5419    |

Table 8: Integration of SERVQUAL and Kano model

| Dimensions    | Service Quality Attributes                                                                 | P-E Gap  | Kano Category |
|---------------|-------------------------------------------------------------------------------------------|----------|---------------|
| Reliability   | RI8 Provide all the required information and instructions regarding admission, Treatment, | -1.5776  | M             |
|               | and discharge clearly to patients and attendants                                          |          |               |
| Reliability   | RI7 Error free and fast retrieval of documents                                            | -1.4526  | M             |
| Tangibility   | TA3 Fast and Computerized registration and billing procedures                             | -0.7888  | M             |
| Tangibility   | TA6 Pharmacy within the premises                                                          | -0.5991  | M             |
| Tangibility   | TA4 Pathology laboratory and or imaging centre within the premises                        | -0.5345  | M             |
| Tangibility   | TA12 Canteen with hygienic food                                                           | -0.4310  | M             |
| Tangibility   | TA11 Continuous electricity and water supply                                              | -0.1983  | M             |
| Tangibility   | TA2 Staff with appropriate name badges                                                     | 0.2284   | M             |
| Tangibility   | TA18 Promotional brochures, service tracking documents etc.                                | 0.3879   | M             |
| Reliability   | R15 Doing correct diagnosis right at the first time                                        | -2.0000  | O             |
| Assurance     | AS2 Feeling safe while dealing with hospital as per the cost of treatment is concerned.   | -1.9612  | O             |
| Assurance     | AS3 Feeling safe while dealing with hospital as per medicines are concerned.               | -1.9440  | O             |
| Empathy       | EM5 Consistency of charges                                                                  | -1.9440  | O             |
| Empathy       | EM7 Keeping the patients informed and listening to them                                    | -1.9310  | O             |
| Empathy       | EM6 Understanding the specific needs of the patients                                       | -1.8233  | O             |
| Assurance     | AS1 Confidence generating behavior of hospital personnel                                   | -1.8190  | O             |
| Reliability   | R13 Provides services like emergency care at the time they promise                          | -1.7802  | O             |
| Responsiveness| RE2 Prompt services to patients by hospital personnel                                       | -1.7155  | O             |
| Assurance     | AS6 Enough Knowledge of hospital personnel to answer patients questions                    | -1.6983  | O             |
| Reliability   | RE4 Availability of hospital personnel to respond to patients’ requests always             | -1.6681  | O             |
| Empathy       | EM1 Individual attention given to the patient by hospital                                  | -1.6207  | O             |
| Reliability   | R12 Problem solving with sincere interest                                                   | -1.6164  | O             |
| Assurance     | AS5 Hospital personnel treat their patients with courtesy                                   | -1.6078  | O             |
| Assurance     | AS4 Feeling safe while dealing with hospital as per trust with the personnel etc. is concerned. | -1.5000  | O             |
| Responsiveness| RE1 Accurate information regarding when services are to be provided by hospital personnel | -1.4957  | O             |
| Empathy       | EM4 Good sympathetic care                                                                  | -1.4785  | O             |
| Reliability   | R11 Provides services by a certain date as per the promises                                | -1.4181  | O             |
| Dimensions | Service Quality Attributes                                                                 | P-E Gap | Kano Category |
|------------|------------------------------------------------------------------------------------------|---------|---------------|
| Reliability | RI9 Availability of related medical and paramedical facilities                            | -1.3750 | O             |
| Reliability | RI6 Services provided at appointed time                                                   | -1.2845 | O             |
| Reliability | RI4 Provides services like casual services at the time they promise                        | -1.2802 | O             |
| Empathy    | EM2 Convenient operating hours for e.g. 24 hours service facility                         | -1.2457 | O             |
| Tangibility| TA8 Latest devices, technologies and medical equipments                                    | -1.0690 | O             |
| Tangibility| TA23 Adequate, comfortable and clean intensive care units                                  | -1.0431 | O             |
| Tangibility| TA10 Proper safety and comfort measures                                                   | -1.0345 | O             |
| Tangibility| TA21 Adequate, comfortable and clean clinical and diagnostic test rooms                   | -0.7629 | O             |
| Tangibility| TA15 Comfortable conditions such as temperature, ventilation, and odour.                  | -0.7500 | O             |
| Tangibility| TA9 Systematic layout of Hospital departments                                              | -0.7457 | O             |
| Tangibility| TA7 Easily accessible Location of hospital                                                | -0.7241 | O             |
| Tangibility| TA22 Adequate, comfortable and clean pre-operative and post-operative                    | -0.6466 | O             |
| Tangibility| TA14 Good Housekeeping and sanitation facilities                                           | -0.6034 | O             |
| Tangibility| TA20 Adequate, comfortable and clean waiting rooms                                         | -0.4440 | O             |
| Tangibility| TA17 Ambulance services with minimal cost.                                                | 0.1767  | O             |
| Responsiveness | RE3 Willingness of hospital personnel to help patients                                     | -1.8621 | A             |
| Tangibility  | TA5 Blood bank within the premises                                                        | -0.8103 | A             |
| Empathy     | EM3 Fixing the operation timings according to requirement                                 | -0.7500 | A             |

**Note:** A-Attractive, O-One Dimensional, M-Must be