# APPROACH TO IDENTIFY FACTORS THAT ENHANCE PATIENT SATIFACTION IN PUBLIC HOSPITAL, A CASE STUDY

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**ABSTRACT**

*Patient satisfaction is one of the most common indicators in determining the quality of healthcare. It is always associated with the whole treatment experience since the moment they enter the medical facilities to the time they are discharged. With an increasing constraint on the resources and demand from the customers, public healthcare service has been put under a higher pressure to continuously seek improvement to deliver better services. The main objective for this study is to demonstrate a practical approach on identifying the important factors in enhancing the patient's satisfaction in public hospital in two main areas; the Emergency department (ED) and Medical wards (MW). For this study, a methodology which incorporates staff inputs as an important element for the development of the survey questions to determine the features that could increase the patient satisfaction that has been proposed. Based on the Kano model analysis, the main factors that contributes to the enhancement in patient satisfaction are the availability of sufficient parking area, Wi-Fi services at the ED, sleeping chairs and wheelchairs at the MW, and an effective staff communication to the patients and their relatives.*

*Keywords – Healthcare; Patient satisfaction; Kano Model*

## INTRODUCTION

Healthcare is one of the world largest, costliest and fastest growing industries which forms a massive part of the economy (Kocakulah and Austill, 2007). Factors such as rapid technology transformation, demographic trends and lifestyle changes have contributed a lot to this fact (Koumpouros, 2013). In 2014, critical issues were discussed globally for the public sector which includes the healthcare cost management and meeting the customers demand for equitable and quality access to healthcare (Deloitte, 2014). The worldwide healthcare organization is struggling to deal with the high cost and services (Deloitte, 2014). Complex operational processes and various customer conditions have led to more inpatient complaints towards the hospital services which affects the hospital performances (Yuen and Ng, 2012). Gurd and Gao (2008) stresses that the patient satisfaction is the overall indicator of the hospital's internal process and services towards the client which corresponds to the patient's loyalty and hospital's revenue. About 17-27 percent of variations in the hospital's financial measures i.e. earnings, net revenue and return on assets, have been shown to be contributed by the level of patients' perception (Nelson et al, 2004). A low patient satisfaction may lead to poor compliance, with the potential waste of resources and suboptimal clinical outcomes (Abd Manaf, 2012). Therefore, to deliver a world-class healthcare while facing constrained resources and a greater demand, a long-term vision and effective strategy should be developed. Collaborative approach which uses various improvement techniques and

useful knowledge is needed to further expand the health innovation system in the public hospitals as well to improve its service quality, thus leading to a higher patient's satisfaction (Coombs et al, 2003; Von Hippel, 1988).

A common practice to assess the level of satisfaction in the healthcare quality services is by conducting a survey (Al-Abri and Al-Balushi, 2014). Many examples of surveys can be found in the literature. For example, studies on the patients perception on healthcare service quality in Pakistan (Shabbir et al,2016), patient satisfaction and loyalty in Bangladeshi healthcare sectors (Ahmed et al, 2017) and healthcare service delivery in Ghana (Boakye et al, 2017). Most of these surveys, however, use a blanket approach to determine the customers' perception. For example, by giving random surveys or questions to anyone who had experienced with the healthcare service. Another issue is that they focused mainly on the customer perception on quality services provided, rather than soliciting on factors that can enhance the customer satisfaction.

To determine and improve the patient satisfaction, we must firstly assess on factors that can influence their satisfaction. There are two types of quality model in which the fulfilment of the required quality elements can be interpreted; One-Dimensional and Two-Dimensional models. In the One-Dimensional Quality Model, customers are satisfied when the required quality elements are fulfilled and dissatisfied when they are unfulfilled. A Two-Dimensional Quality Model, on the other hand, shows a different perspective that the fulfilment results, does not always lead to satisfaction, but sometimes the customers feels indifferent about the quality elements offered or even dissatisfied. Kano et al (1984), proposed the Two-Dimensional Quality Model; satisfaction and functional, as shown in Figure 1, to gain a thorough understanding of a customer's need to identify the critical factors. This technique has been used widely in many healthcare service studies on patient satisfaction (Alireza et al., 2015, Materla et al., 2017, Harijith and Haris, 2017, Lotfizadeh et al., 2017, Shahin and Akasheh, 2017). One important aspect of the Kano model is the development of questionnaires, which is based on the potential elements identified to enhance customers' satisfaction. Several methods have been used to identify those elements. Chang and Chang (2013) used literature and dentist suggestions as main sources of generating key elements for dental care quality. Gustavsson et al. (2016) determined the patients' needs based on findings of an internet-based survey on the patients' experience and focus group interview. Tripathi et al. (2017) also used focus group sessions as well as the panel of experts to develop questionnaires related to the critical elements for intensive care rounds.

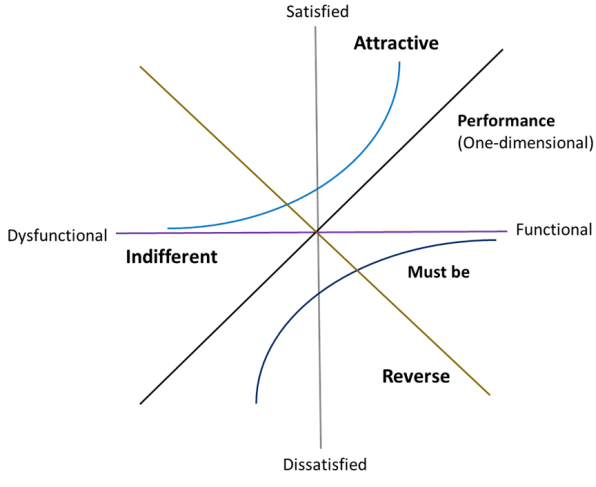


**Figure 1** Kano model (Kano et al., 1984)

In this paper, a practical approach for identifying critical factors to patients' satisfaction are targeted at two main areas; Emergency Department (ED) and Medical Wards (MD), of a local hospital. Rather than using a blanket approach, unique key elements related to each area have been identified. Instead of a focus group interview, this study explores the technique of systematic brainstorming session with the hospital personnel in identifying the important elements to the customers' satisfaction and developing related Kano-model based questionnaires. The study focuses on a public hospital, a government operated hospital, instead of private hospital since there is generally a lower quality service and customer satisfaction at ED and MW for public hospitals (He et al., 2017).

## METHODOLOGY

This study was conducted in one of Malaysian public hospitals at its Emergency Department (ED) and the Medical Ward (MW). The proposed methodology used for this study is described in Figure 2.

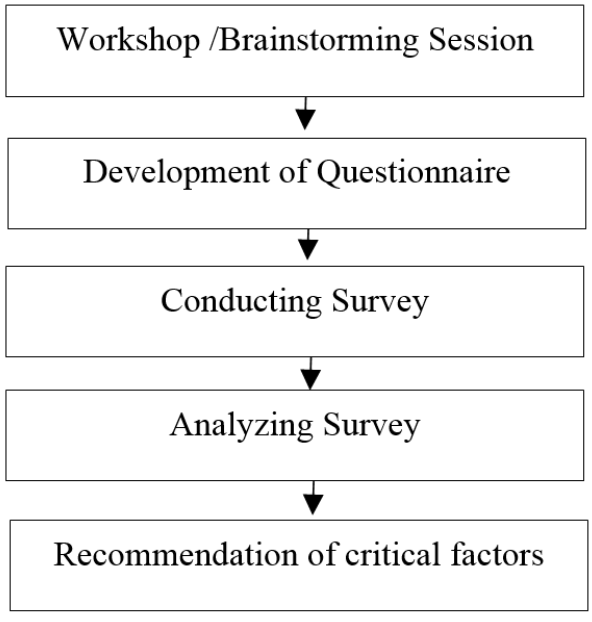


**Figure 2** Methodology used to assess patient satisfaction

*Workshop with hospital staff*

A workshop was conducted with selected hospital staff from ED and MD to discuss and brainstorm on the issues faced by the patients and their relatives. Beginning of the workshop, a presentation was made on the literature review findings on various initiatives undertaken by other healthcare institutions worldwide to increase the patients satisfaction and experience during their stay in the hospital. This presentation was aimed to provide relevant examples for the team to start thinking creatively about ideas and possibly to adopt or adapt some of them for the team improvement plans. The idea of divergent and convergent thinking was then applied intensively throughout the brainstorming process. Divergent thinking or sometimes called as lateral thinking is the process of creative thinking which approaches different principles and ideas to find new solution to the problem (de Bono, 1992). Convergent thinking emphasizes on logic and focuses on recognizing the familiar patterns and accumulating the stored information to come out with certain solutions (Arthur, 2006).

The staff involved in this workshop includes doctors, matrons, sisters, and medical assistants. The participants were divided into two major groups; ED and MD, focusing on issues and improvements at each area. Based on the improvement initiatives done by other hospitals (literature) and staff experiences, the two groups used brainstorming to find factors affecting patient satisfaction. The brainstorming started with a discussion on the issues and factors critical to customers' satisfaction. Sticky notes were used extensively in which everyone writes down his or her own ideas on the notes (one idea per note) as much as possible, and later posted them on the white board (divergent thinking). These listed factors were then regrouped into certain categories based on area of commonality across the responses received (convergent thinking). Next, another brainstorming session was conducted to find an appropriate improvement action to address those identified issues (divergent thinking). Although this brainstorming session was the first for many of them, they really enjoyed the exposure and saw the advantages of it in streamlining their ideas.

*Development of Questionnaire*

Based on the outcomes of the brainstorming session and literature findings, the survey questionnaire was developed. The set of questionnaires were different for both ED and MW, based on the potential critical factors to the customer satisfaction identified in the brainstorming session. Generally, the questionnaires were divided into three main sections. The first section included the demographic characteristics of the respondents. The second section comprised of core questions that assess the level of satisfaction of patients with regards to various features (factors) proposed. Each question is grouped into two sub-groups, one with the feature (Functional group) and another without the feature (Dysfunctional group).

An example of functional question is "How do you feel if Wi-Fi is here Service available in the waiting area", and for dysfunctional is "How do you feel when Wi-Fi services is unavailable in the waiting area". The response to questions were rated by using a Likert scale from the range of 1-5 as shown in Table I. The final section includes general questions in which additional comments regarding the service quality is sought from the patients and their relatives.

M - Must-be Quality
I - Indifferent Quality
R - Reverse Quality
Q - Questionable (error)

Attractive features are those that simply excite the patients. Performance feature states that satisfaction relies on what we provide; the patients are much satisfied. The feature is what are services the patients

**Table 1** Kano Model question layout

| | RATINGS | | | | |
|---|---|---|---|---|---|
| Feature | Really satisfied | satisfied | Neutral | Unsatisfied | Really Unsatisfied |
| Functional | 1 | 2 | 3 | 4 | 5 |
| Dysfunctional | 1 | 2 | 3 | 4 | 5 |

*Conducting the survey*

The survey was conducted by the hospital staff and executed within two phases. During phase I, questionnaires were distributed to patients at ED. The survey was handed to them while they were waiting for consultation after completed their registration. Another set of questionnaires were distributed to patients and their relatives at MW in phase II. In each survey, all respondents were given a small gift as a token of appreciation and encouragement for participating in the survey.

*Analyzing the survey*

The questionnaire was analyzed based on 3 parts. The first part was on the demographic profile and the third part was summarized based on the comments from the respondents. The second part, which the core questions, were analyzed by using the five level quality attributes based on Kano model (Chang and Chang, 2013):

A - Attractive Quality (Wow Factors)
P – Performance Quality (One-dimensional)

expect and taken for granted. When it exists, patients are neutral, but when it is absent, patients feel very unsatisfied. For an indifferent quality, the presence of this feature will make no difference in the patient satisfaction. In the reverse quality feature, its present cause patients' dissatisfaction, and when in absence causes satisfaction. The Additional "Questionable" category was added to indicate the presence of inconsistency in the answer due to either the questionnaire or respondent error.

The attribute classification (A, P etc.) on response for each question was specified based on the evaluation charts shown in Table II. Each attribute classification later was summed up for all responses for each question and the highest number of attribute classification will determine the appropriate type for that particular question or feature. Therefore, the significance of each feature can be determined.

**Table 2** Kano Model features and attributes

| | | Features Absent | | | | |
|---|---|---|---|---|---|---|
| | | I really like it | I like it | Neutral | I dislike it | I really dislike it |
| Features Present | I really Like it | **Q** | **A** | **A** | **A** | **P** |
| | I like it | **R** | **I** | **I** | **I** | **M** |
| | Neutral | **R** | **I** | **I** | **I** | **M** |
| | I dislike it | **R** | **I** | **I** | **I** | **M** |
| | I really dislike it | **R** | **R** | **R** | **R** | **Q** |

Besides categorization of the factors based on quality attributes, the significance of each factor can be assessed based on the satisfaction and dissatisfaction coefficients (SC and DC)(Tripathi et al, 2017). SC and DC are derived from Timko's (1993) description on the "Better" and "Worst" conditions, respectively. SC indicates on how much patient satisfaction will increase if the particular feature is provided, whereas DC indicates how much customer satisfaction will decreased if the particular feature is missing. SC and DC can be calculated by the following formula (Timko, 1993):

$SC = (A + P) / (A + P + M + I)$

$DC = (P + M) / (A + P + M + I)$

*Recommendation to the Hospital*

Based on the outcomes of the analysis, factors that can contribute to the patient satisfaction were identified and later presented to the Hospital for further consideration and actions.

**Table 3** Brainstorming outcomes: Main issues and proposed solutions

| Area | Issues | Proposed Solution |
|---|---|---|
| MW | *Communication*<br>· Lack of information regarding the treatment and diagnosis<br>· No proper information given on the discharge plan<br><br>*Facilities*<br>· No Wi-Fi Service<br>· Insufficient/Poor directional Map/Signage<br><br>*Process and Procedure*<br>· Patients not informed regarding the estimated discharge time<br>· Patient/family members need to go to pharmacy to collect the medicine<br>· Patient/family must go downstairs to settle the bills | · List of treatment plan to be shared with patients<br>· re-discharge checklist<br><br>· To provide Wi-Fi service<br>· Suggest for placement of maps in strategic locations<br><br>· Medicines are to be sent straight to ward before the discharge process<br>· To provide payment counter/facilities near the ward. |
| ED | *Facilities*<br>· Not enough parking facilities<br><br>*Communication*<br>· Patients and family members are not informed about the situation and treatment given. | · Identify new area / extend parking area<br><br>· Improve the doctor / staff -patient communication |

*Survey Demographic*

During phase I of the project in ED, 60 survey forms were distributed with 60 surveys successfully returned, yielding a 100% response rate. The demographic profile of respondents is shown in Table IV. Phase II of the survey was conducted three weeks later. Another 60 survey forms were distributed to the Medical Wards with 58 of the survey forms collected yielding a 96.67% response rate. The demographic profile is shown in Table V. A higher percentage of Malay for both surveys compared to other races reflected the similar composition of current population in Malaysia.

## DISCUSSIONS

The second part of survey analysis consists of the two-dimensional questionnaire based on Kano Model representation. The outcomes of the Kano model for both ED and MW are shown in Table VI and VII, respectively. The results of the survey were analysed based on the five-level Kano model attributes and the highest attributes of each question were identified and listed.

**Table 4** Demographic profile of respondents for ED

| Demographic Features | | Frequency | Percent (%) |
|---|---|---|---|
| **Gender** | Male | 28 | 47% |
| | Female | 32 | 53% |
| **Age** | <20 years | 3 | 13% |
| | 21-30 years | 21 | 35% |
| | 31-40 years | 16 | 27% |
| | 41-50 years | 14 | 23% |
| | >50 years | 1 | 1.2 |
| **Race** | Malay | 34 | 56% |
| | Chinese | 7 | 12% |
| | Indian | 16 | 27% |
| | Others | 3 | 5% |

**Table 5** Demographic profile of respondents for ED

| Demographic Features | | Frequency | Percent (%) |
|---|---|---|---|
| **Gender** | Male | 24 | 41% |
| | Female | 34 | 59% |
| **Age** | < 20 years | 8 | 14% |
| | 21-30 years | 12 | 21% |
| | 31-40 years | 23 | 39% |
| | 41-50 years | 8 | 14% |
| | >50 years | 7 | 12% |
| **Race** | Malay | 38 | 66% |
| | Chinese | 10 | 17% |
| | Indian | 10 | 17% |
| | Others | 0 | 0% |
| **Category** | Patient | 29 | 50% |
| | Relatives | 29 | 50% |

Based on the Kano model analysis for ED, two features are in the attractive attribute, namely the availability of Wi-Fi Services and continuous updates on patient treatment to the patient's relatives. Availability of free and fast Wi-Fi at ED can be a "Wow" factor that will please the customers since it is becoming a norm for people to disseminate the latest update on patient condition by using mobile phone social media applications such "WhatsApp" and "Facebook", which requires Wi-Fi. Sharing photos and videos using this platform is much more appealing, descriptive and informative compare to phone call or messages. The respondents also believed that features such as availability of more parking area, hospital staff explaining on patient's condition in an understandable manner and detailed information about diagnosis given to patient as the performance attributes. The parking availability concern highlighted was also in tandem with the latest finding of customer's satisfaction survey conducted by the hospital quality management unit, hence it needed to be addressed appropriately.

Other features are listed as the Indifferent attribute, whereby the presence of this feature will make no difference in customer satisfaction. These include availability of shuttle services, maps and children playground. Shuttle service seems not too attractive, even though it is meant to take customers to their parking areas.

As for the Medical Ward, the Kano model analysis identified two features as Attractive attributes; i) the availability of wheelchairs and sleeping chairs in Medical Ward and ii) information on the treatment plan are given to patients. Features such as readiness of nurses in providing services, mannerism of the hospital staff, thorough explanation about health condition to the next of kin and constant updates regarding health conditions to patient are listed as the Performance attribute. Indifferent attribute includes availability of locker services, shower room facilities for patient's relatives, wider choices of dietary food and hand phone charging stations.

**Table 6** Kono Model analysis for ED

| No | FEATURES | FREQUENCY | | | | | | HIGHEST | TYPE | SC | DC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M | P | A | I | R | Q | | | | |
| C-1 | Constant updates regarding treatment to relatives | 4 | 16 | 19 | 17 | 1 | 3 | 19 | A | 0.63 | -0.36 |
| F-1 | Availability of Wi-Fi Services | 4 | 17 | 18 | 16 | 5 | 4 | 18 | A | 0.64 | -0.38 |
| F-2 | Availability of More parking area | 0 | 38 | 10 | 6 | 3 | 3 | 38 | P | 0.89 | -0.70 |
| C-2 | Detailed information about patient diagnosis | 2 | 24 | 23 | 8 | 0 | 3 | 24 | P | 0.82 | -0.46 |
| C-3 | Staff explains clearly the patient condition | 1 | 23 | 11 | 18 | 3 | 4 | 23 | P | 0.64 | -0.45 |
| C-4 | Staff responses quickly on any inquiries | 0 | 19 | 18 | 16 | 4 | 3 | 19 | P | 0.70 | -0.36 |
| P-1 | Greeting at the Entrance | 4 | 5 | 14 | 31 | 3 | 4 | 31 | I | 0.35 | -0.17 |
| F-3 | Entertainment facilities in Waiting Area (eg: TV etc.) | 1 | 13 | 11 | 30 | 2 | 4 | 30 | I | 0.44 | -0.25 |
| F-4 | Availability of Shuttle Services to parking area | 2 | 14 | 14 | 29 | 1 | 1 | 29 | I | 0.47 | -0.27 |
| F-5 | Waiting Area, a Kid's Friendly zone | 5 | 12 | 10 | 29 | 2 | 3 | 29 | I | 0.39 | -0.30 |
| F-6 | More maps and signage at strategic locations | 1 | 6 | 19 | 27 | 1 | 7 | 27 | I | 0.47 | -0.13 |
| P-2 | Staff provides an estimate waiting time for treatment | 4 | 15 | 13 | 24 | 2 | 3 | 24 | I | 0.50 | -0.34 |
| F-7 | Children Playground Area Nearby ED | 0 | 8 | 12 | 22 | 3 | 5 | 22 | I | 0.48 | -0.19 |

KANO MODEL ANALYSIS FOR MW

| No | FEATURES | FREQUENCY | | | | | | HIGHEST | TYPE | SC | DC |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | M | P | A | I | R | Q | | | | |
| F1 | Availability of Wheelchairs and Sleeping Chairs | 0 | 13 | 22 | 20 | 1 | 1 | 22 | A | 0.64 | -0.24 |
| C1 | Information on Treatment Plan for patients | 5 | 17 | 19 | 16 | 1 | 0 | 19 | A | 0.63 | -0.39 |
| C2 | Readiness of Nurses in providing service | 0 | 26 | 18 | 18 | 1 | 0 | 26 | P | 0.71 | -0.42 |
| C3 | Mannerism of Hospital Staff | 1 | 24 | 11 | 22 | 1 | 0 | 24 | P | 0.60 | -0.43 |
| C4 | Thorough Explanation of Treatment Plan for patients | 2 | 24 | 13 | 18 | 1 | 0 | 24 | P | 0.65 | -0.46 |
| P1 | Medicine sent straight to Ward (not pick up at Pharmacy) | 1 | 22 | 14 | 18 | 1 | 0 | 22 | P | 0.65 | -0.42 |
| C5 | Constant Updates regarding health condition to patient | 1 | 23 | 15 | 19 | 1 | 0 | 23 | P | 0.66 | -0.41 |
| P2 | Payments paid near MW (not Finance Counter downstair) | 0 | 23 | 12 | 17 | 1 | 0 | 23 | P | 0.67 | -0.44 |
| C6 | Thorough Explanation on health condition to relatives | 1 | 22 | 14 | 18 | 1 | 0 | 22 | P | 0.65 | -0.42 |
| F2 | Children Indoor Playground Facility | 0 | 7 | 9 | 40 | 3 | 2 | 40 | I | 0.29 | -0.13 |
| F3 | Vending Machines near medical ward | 0 | 5 | 13 | 38 | 2 | 0 | 38 | I | 0.32 | -0.09 |
| F4 | Recreational Park Facility | 0 | 12 | 13 | 35 | 1 | 0 | 35 | I | 0.42 | -0.20 |
| F5 | Handphone Battery Charging Service | 0 | 15 | 9 | 33 | 1 | 0 | 33 | I | 0.42 | -0.26 |
| F6 | Wider range of dietary food | 0 | 15 | 14 | 27 | 0 | 0 | 27 | I | 0.52 | -0.27 |
| F7 | Availability of Wi-Fi | 1 | 15 | 15 | 27 | 5 | 0 | 27 | I | 0.52 | -0.28 |
| F8 | Transportation for patient after discharge | 0 | 14 | 15 | 27 | 1 | 0 | 27 | I | 0.52 | -0.25 |
| F9 | Locker Services in Medical Ward | 0 | 20 | 10 | 25 | 1 | 0 | 25 | I | 0.55 | -0.36 |
| F10 | Shower Room Facilities for Family Member | 0 | 19 | 10 | 25 | 1 | 0 | 25 | I | 0.54 | -0.35 |

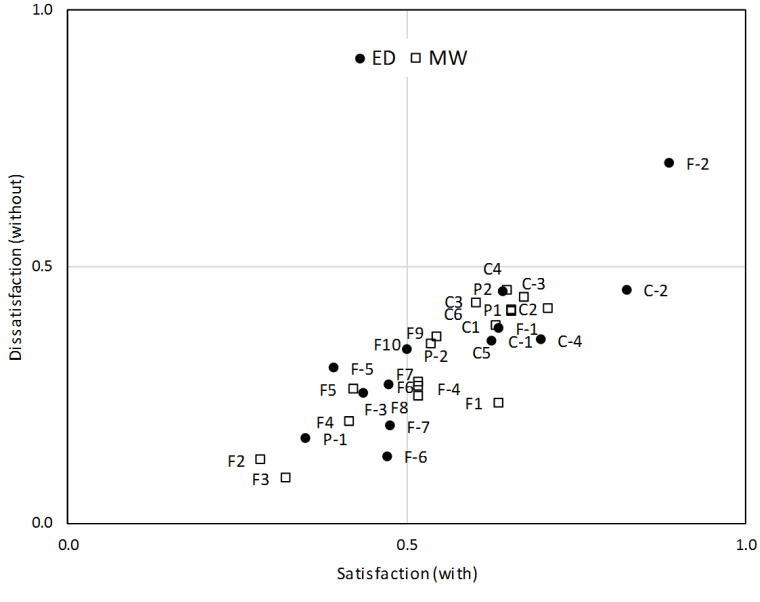


**Figure 3** SC and DC indexes for ED and MW

Satisfaction and dissatisfaction coefficients plot (SC and DC) for both ED and MW are shown in Figure III. Based on the plot, factors which can most enhance satisfaction if provided and cause an increase in dissatisfaction if not addressed is the availlability of sufficient parking lots (F-2), hence needed to be taken seriously by the hospital management. The least important factors are the provisions of children playground facility (F2) and vending machines (F3) near the MW. Vending machines may not be needed there since there are many shops.

Based on the analysis results from the Kano model, it can also be seen that in general, effective communication to patients and relatives is found to be the most critical factor in enhancing the patient satisfaction at both ED and MW. This discovery echoes well with the findings from other studies (Ha and Longnecter, 2010; Markides, 2011). These outcomes were then presented to the hospital that are being studied. Based on the findings they planned to focus more on the patient's communication by conducting subsequent workshop on this.

## CONCLUSIONS

The proposed practical approach on identifying the critical factors for patient satisfaction has been successfully demonstrated. Engaging hospital staff in brainstorming session and incorporating their inputs has contributed a lot to the understanding of patient needs, leading to the formulation of relevant survey questions developed for Kano analysis. The study also revealed that patients in different hospital service areas (in this study; ED and MW) have different preferences, hence requiring proper segmentation and set of questions, rather than using a blanket approach. This collaboration study also benefits hospital staff as the exposure gained will enable them to independently pursue the necessary future investigation on patient preferences on quality services. Based on the Kano analysis conducted in the MW and ED, the main factors that enhances the patient experience in this hospital are the availability of Wi-Fi services and sufficient parking area at ED, allocation for more sleeping chairs and wheelchairs at MW, and an effective communication by hospital staff to patients and their relatives in terms of time to time sharing of the information about patients' treatment plan and condition.

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