



# Building a Total Quality Management Model for Healthcare Industry

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## Abstract

This paper is made to present a Total Quality Management (TQM) Model for Healthcare Industry for Indonesia. From previous study, there are nine Total Quality Management (TQM) practices in healthcare industry such as Top Management Commitment (TMC), Teamwork and Participation (TWP), Process Management (PM), Customer Focus and Satisfaction (CFS), Resource Management (RM), Organizational Behavior and Culture (OBC), Continuous Improvement (CI), Training and Education (TE) and Information Management (IM). However, these practices are not integrated yet. Therefore, this paper aims to integrate these practices by applying Structural Equation Modeling (SEM). After administering about 200 questionnaires using Linear Structural Relations (LISREL) program, the p-value is at 0.45 above required 0.05 giving the meaning that the model is good fit. This signifies that these nine TQM practices are required to achieve goals of the industry

**Keywords:** Total Quality Management (TQM), Healthcare industry, Structural Equation Modeling (SEM), Lisrel

## 1. Introduction

In any healthcare industry, there are about three stages of the care. First stage is served by the family physician. If the disease is not well handled by this first stage, the patient may be referred to the secondary stage. In this stage, the patient may be handled by specialist. As the previous stage, if the disease can not be handled by specialist, he or she may be referred to the tertiary stage.

In Indonesia, the number of hospitals, as the tertiary services, is increasing rapidly from 2,228 units in 2013 to 2,488 units [22]. This may due to the huge population of Indonesia which ranked number 4 in the world. However, reference [23] stated that despite of this growing number of hospitals, about 600,000 Indonesians still choose to have medical treatments aboard. This condition may be perceived negatively since it may cause the country's capital reserves flows out from the country. On the other hand, of course it will be great if they can get the service in domestic without going aboard.

Meanwhile, reference [23] was also reported that there were about 182 malpractice cases have been filed during the year of 2012 alone. This may worsen the condition as a sign of low quality of care that may be undertaken in Indonesia's healthcare industry despite of its increasing number of hospitals. This of course may encourage many Indonesian to seek healthcare services aboard and of course Indonesian domestic healthcare may suffer not mention the huge investment that Indonesian may burden for procuring the infrastructure in this sector.

Furthermore, Indonesian healthcare industry are also facing an increasing healthcare costs. In conclusion, these three conditions may encourage it to increase its performance so that it may prevent those pre-mentioned problem.

Therefore, the government has encouraged this industry to get accreditation in order to improve the quality of care of this industry through Accreditations Standards for Hospitals by Commission

on Accreditation of Hospitals (Komite Akreditasi Rumah Sakit). This enforcement is especially to promote the quality of care from this industry. Besides that the government also wants to ensure that the Indonesian can get the best quality of care everytime they need it. To make it clear, recently the government has urged all hospitals to be accredited before 2021.

However, reference [12] reported that from 2,506 units there are only 284 hospitals are accredited. Furthermore, reference [25] reported that this accreditation cannot guarantee the improvement of the quality of care. It suggests the implementation of Total Quality Management (TQM) instead.

However, reference [11] reported that the studies on Total Quality Management (TQM) practices in healthcare settings are still rare, therefore, it conducted a study on this matter. It found that in the development of Total Quality Management (TQM) implementation in healthcare industry, there are at least eight Total Quality Management (TQM) practices needed to increase the quality of care [1]. Meanwhile, reference [25] added information management as another important Total Quality Management (TQM) practice totaling there are nine Total Quality Management (TQM) practices suggested by previous study in order to improve the quality of care.

However, the problem is that these practices are not integrated accordingly to the philosophy of Total Quality Management (TQM) covering customer focus, total participation and continuous improvement. Therefore, the objective of this research is to integrate these eight Total Quality Management (TQM) practices as a model of Total Quality Management (TQM) for healthcare industry.

## 2. Literature Review

Reference [1] proposed a conceptual model of Total Quality Management (TQM) practices that influences its implementation in

healthcare industry as depicted in figure 1. In this figure, there are at least eight Total Quality Management (TQM) practices in this model. Those practices are claimed as critical for the success of Total Quality Management (TQM) implementation in the industry [1]. By conducting them, it is believed that this industry may benefit from improved performance, patient satisfaction, improved quality of care and reduced operating cost [1].

From the figure, the mentioned eight Total Quality Management (TQM) practices cover Top Management Commitment (TMC), Teamwork and Participation (TWP), Process Management (PM), Customer Focus and Satisfaction (CFS), Resource Management (RM), Organizational Behavior and Culture (OBC), Continuous Improvement (CI), and Training and Education (TE). And recently, reference [25] adds Information Management (IM) as another important practices in TQM practices in order to promote the quality care in Health care industry.

As the first practice, Top Management Commitment (TMC) is reported as the most important enabler for Total Quality Management (TQM) implementation in the healthcare industry. Studies reported that leadership in hospitals was connected to the quality of care [2] and therefore, it is the overall hospital systems driver [3]. Other finds that top management is a coach to his subordinates [4]. Meanwhile, reference [5] states that without top management's support in any hospital, any bottom-up quality action may fail. Meanwhile, reference [6] found that committed physicians may play an important role for the success of Total Quality Management (TQM) implementation in hospitals. Furthermore, it was found that everyone may contribute on process management due to the allowance and encouragement by top management rather than individual accountability [7]. In conclusion, top management commitment is required for effective and successful Total Quality Management (TQM) implementation [1].

In the second place, Teamwork and Participation (TWP) is required to overcome any sectionalism so that everyone could cooperate in teams and embark on quality improvement activities with full participation [4]. This may enable them to analyze every organizational problem or issue which is essential in any quality improvement activity [8]. The objective of this practice is that they could solve the quality problems and issues in a fast manner [9]. Therefore, this practice is especially needed to enable any cooperation among functions in healthcare organization as required when conducting any quality improvement effort [1].

As the third practice, Process Management (PM) is considered as the critical practice of healthcare quality because it focuses on the conformity of its output with patient requirements by error-free means in the most efficient way [10]. It enables staff to care his way to strengthen the processes through quality improvement [7]. Furthermore, by focusing this practice, the actual healthcare service can be delivered by means of procedures, mechanism and flow of activities [11]. Hence, it can be said that this practice highlights the perception of patient on how the treatment and its outcome are conducted [1].

The fourth practice is Customer Focus and Satisfaction (CFS). By this practice, a hospital can outsource its competitors not only to handle its patients' needs and demands but also anticipate and respond to their interests and wants [12]. It also ensure the sufficient and suitability of food given to its patients [13]. Therefore, skillful medical personnels are needed to give a sound diagnosis, treatment and care [7] because its ultimate aim is to satisfy customer [1].

In the fifth place, there is Resource Management (RM). Without this practice, any good service cannot be given no matter how skillful doctors, physicians and supporting staff are [13]. Hence, the availability of its facilities and materials may also impact its patient satisfaction [14].

As the sixth practice, Organizational Behavior and Culture (OBC) may also be considered as important. It promotes the atmosphere of a hospital to be friendly and respectful both among staff and between staff and patients which may have impact on the physical condition of patients [13]. By this practice, people feel appreciated because their opinions are prioritized and actions follow sugges-

tions [15]. In addition, this practice should be sustained and nurtured in order to be able to successfully implement Total Quality Management (TQM) [16].

The seventh practice is Continuous Improvement (CI). This practice aims patient's needs fulfillment [4]. It needs training and education of all staffs and physicians with the use of different quality improvement tools and techniques so that they do not only settle for minimum standards but also strive to do their best [17]. Furthermore, this practice is a continuous journey as a desire to strive to achieve patient's satisfaction as a goal [12].

The last or eight practice from the conceptual model is Training and Education. It reflects the capability of a hospital to utilize quality management tools and techniques [18]. In addition, this practice lies as foundation to the success of Total Quality Management (TQM) implementation [8]. Therefore, the employees and staff should be trained in statistical techniques for better quality management [19]. On the other hand, reference [25] reported that information management is also an important practice adding to the previous eight Total Quality Management (TQM) practices. Such information is necessary for the appropriate usage of resources, identification of customer requirements, evaluating the effectiveness and efficiency of the operations and determining the cause of quality problems [25].

These all nine practices should be seen as a whole in Total Quality Management (TQM) perspective because its philosophy lies total effort, customer focus and employee participation

### 3. Methodology

In order to fill the research gap, Structural Equation Modeling (SEM) is utilized based on reference [20]. This is done in order to test the relationships among nine (Total Quality Management) TQM practices whether those relationships are strong or weak. Therefore, there are several steps to be taken as described more in the following section.

Model specification. In this step, a conceptual model is developed based on the previous studies. The model is depicted in the following figure.

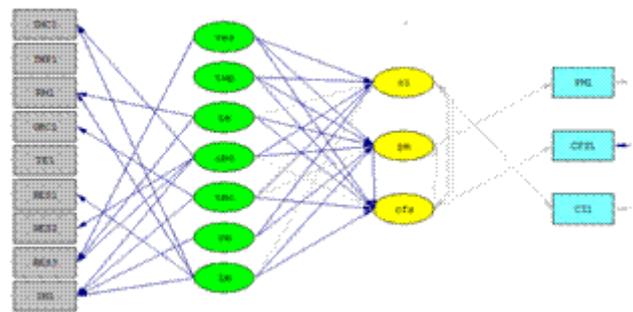


Figure 1. TQM Model for Healthcare Industry: Conceptual Model

From the above figure, it can be seen that all nine Total Quality Management (TQM) practices are about to be integrated. This is important because the philosophy of Total Quality Management (TQM) lies in three pillars such as total effort, customer focus and employee participation. This is not yet integrated from previous studies. Therefore, in this paper, the integration is about to be done and tested its fitness for healthcare industry.

Model identification. This step is done to identify parameter of the conceptual model generated from the first step above.

Model estimation. This is conducted to estimate the parameter which is p-value from the previous step by administering questionnaire to the stakeholders of a hospital covering management, physician, nurse and patient. Their responses are then inputted into LISREL program in order to measure the p-value of the model. Model testing. By running the LISREL program, then the model would be verified based on its p-value. If p-value is higher than 0.05 then the model could be said as a good fit model and if it is

lower than 0.05, then model modification should be conducted in order to find out the good fit model.

Model modification. This step will only be taken if from previous step, the model is not good fitted in order to find out the good fit model.

### 4. Result

The result of the research are elaborated in the following section.

Model specification. In this step, a conceptual model is constructed covering nine TQM practices in healthcare industry such as TMC, TWP, PM, CFS, RM, OBC, CI, TE and IM. These nine TQM practices are latent variables based on SEM model adding one variable latent known as RES.

Model identification. In order to test those nine latent variables from the first step, several observed variables are identified based on the previous study as a set of questionnaire.

From the figure, there are at least 9 hypotheses to be evaluated using SEM such as 1) TMC is correlated to PM, 2) TWP is correlated with CI, 3) PM is correlated with CFS, 4) CFS is correlated to RES, 5) PM is correlated to RM, 6) OBC is correlated with PM, 7) CI is correlated with PM, 8) IM is correlated with PM, and 9) TE is correlated with CI.

Model estimation. This is conducted to estimate the parameter which is p-value from the previous step by administering questionnaire to the stakeholders of a hospital covering management, physician, nurse and patient. According to reference [26], the number of questionnaire for these nine latent variables should be more or equal to 200. After administering to those targeted stakeholders, from 250 set of questionnaires, 200 are returned meanwhile 50 of them left blank or outlier. After that, their responses are then inputted into LISREL program in order to measure the p-value of the model [27].

Model testing. By running the LISREL program, then the model would be verified based on its p-value. If p-value is higher than 0.05 then the model could be said as a good fit model and if it is lower than 0.05, then model modification should be conducted in order to find out the good fit model. From the below figure 2, the p-value is at 0.45 based on the willingness of respondents to answer the questionnaire and because this value is higher than required 0.05, it can be said that this model is good fit. Therefore, this can be confirmed and therefore modification of the model is not needed.

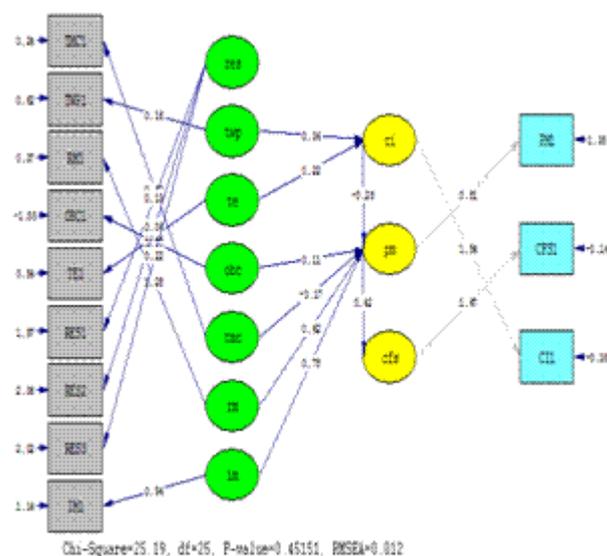


Figure 2. TQM Model for Healthcare Industry: Result

### 5. Conclusion

From the above section, it can be concluded that the Total Quality Management (TQM) model for healthcare industry in Indonesian case should cover all nine Total Quality Management (TQM) practices in order to achieve the industry's good of improved quality of care, patient satisfaction, and reduced cost of care. Those Total Quality Management (TQM) practices are correlated each other and covers in healthcare industry such as Top Management Commitment (TMC), Teamwork and Participation (TWP), Process Management (PM), Customer Focus and Satisfaction (CFS), Resource Management (RM), Organizational Behavior and Culture (OBC), Continuous Improvement (CI), Training and Education (TE) and Information Management (IM).

This, of course, has concluded that this research output is the new principle in term of model that should be followed by health care industry in order to improve its performances so that each hospital may attract, attain, and retain its patients so that they do not need to go aboard seeking for better quality of care because in domestic they may find it. This new principle of course covers all previous mentioned nine Total Quality Management (TQM) practices such as Top Management Commitment (TMC), Teamwork and Participation (TWP), Process Management (PM), Customer Focus and Satisfaction (CFS), Resource Management (RM), Organizational Behavior and Culture (OBC), Continuous Improvement (CI), Training and Education (TE) and Information Management (IM).

Among these nine Total Quality Management (TQM) practices, Top Management Commitment or sometimes terms as leadership by several researchers has seen the most central in the whole Total Quality Management (TQM) effort besides Teamwork and Participation (TWP) due to the culture of Indonesia where values most to these two elements in the daily life. Therefore, before implementing such model, the hospital should ensure the fitness and the capability of its leaders and teams as winning team in order to carry out this initiative.

For government, this research has supported its effort to promote the importance of Total Quality Management (TQM) to be implemented in healthcare industry. Meanwhile for the hospital itself, this may serve as a guidance for them in implementing Total Quality Management (TQM) so that they may be more prepared in their effort to be accredited by the government. Lastly, of course, for the patient, this may help them to be secured because they can easily find good hospital to serve their needs.

However, this research still has limitation in terms of object of this research which is only in a hospital with only 200 respondent. In order to be claimed as the whole industry, this sample needs to be expanded to get a proper view of the industry.

Therefore, for the future research, it should be expand its sample to cover the whole industry in Indonesia so that the result may be generated as a whole picture of the industry. Besides that it may also be implemented in the hospital to validate its usefulness for the industry.

### Acknowledgement

The authors would like to thank the financial support provided by Universitas Indonesia through the PITTA 2017 funding scheme under Grant No. 844/UN2.R3.1/HKP.05.00/2017 managed by the Directorate for Research and Public Services (DPRM) Universitas Indonesia

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