

## A Self-Assessment Model for King Abdullah II Award for Excellence

*Ibrahim A. Rawabdeh* \*

### ABSTRACT

As Jordan confronts the realities of the changing global marketplace, the importance of quality to its competitiveness, productivity, and standard of living has become a clear reality. Stemming from this perspective, a Jordanian national quality award named King Abdullah II Award for Excellence was introduced. The award criteria establish guidelines that can be used by business organizations in evaluating their own quality improvement efforts. It also provides guidance to Jordanian companies by disseminating information which details the best-in-class organizations, in order to change their cultures and achieve eminence. This paper proposes a model that uses the criteria of the award as the basis for creating a self-assessment tool to measure quality performance in organizations. Accordingly, the award criteria was translated into a multi-item questionnaire and used to assess quality performance in various functions of an organization. Companies can analyze their assessment outcome through the results, and can use these results as the basis for future self-assessments and to set their action plans in order to maintain the continuous improvement process. The self-assessment model was validated by applying it on a recent winner of the award. High accuracy and validity were obtained from the analysis. Results showed significant correlation between the assessment score and the actual one that the award's winner received in the 2003-2004 cycle of the award.

**KEYWORDS:** Total Quality Management, Self-Assessment, King Abdullah II Award for Excellence, Model, Jordan

### 1. INTRODUCTION

Global competitiveness is increasing at a phenomenal rate as more countries are embracing the free market model and opening up their borders for investments and trading. Therefore, the philosophy of quality management provides the approach to realize this fundamental business strategy and inculcates business practices that will satisfy customers, reduce costs, increase productivity, and enhance the quality of outputs. In short, quality management practices help to enhance business excellence (EFQM, 1999).

Quality management has been recognized by many countries to be one of the keys to competitiveness. However, the sustenance of quality management in organizations is a long-term effort. Increasingly, national governments are playing an active role in promoting and

encouraging organizations to embrace quality management practices. Many countries have established national quality awards to recognize deserving companies which had excelled in quality management practices; such as the Malcolm Baldrige National Quality Award (USA), UK Quality Award (UK), European Quality Award (Europe) and Deming Prize (Japan). In addition and during the past few years many other countries have also established their own national quality awards.

The national quality award programs are developed to promote quality awareness, recognize quality achievements of companies, and to provide a platform for sharing successful quality management initiatives. Some positive experiences and effects were recognized, such as a perceived improved customer orientation, a comprehensive view of the business, a degree of participation by everyone, and a systematic improvement at work. In many countries, however, the development of national quality awards is still new (Eriksson, 2003). Most national quality awards use a framework of criteria that seeks to assess an organization's quality related

---

\* Department of Industrial Engineering, Faculty of Engineering and Technology, University of Jordan. Received on 29/3/2005 and Accepted for Publication on 17/9/2006.

performance (Ritter, 1993). Moreover, the expectations of company managers, executives, and other professionals regarding the types of firm performance and returns would be needed to justify undertaking a quality award process (Davis and Stading, 2005).

As Jordan confronts the realities of the changing global marketplace, the importance of quality to its competitiveness, productivity, and standard of living has become a clear reality. Stemming from this perspective, a Jordanian national quality award named King Abdullah II Award for Excellence (KAIIE) was introduced. KAIIE criteria establish guidelines that can be used by business organizations in evaluating their own quality improvement efforts. The award also provides guidance to Jordanian companies by disseminating information detailing how best-in-class organizations were able to change their work environment, cultures and achieve eminence.

The actual mode of assessment for King Abdullah II Award for excellence is the evaluation of a written application by a team of quality assessors. The written application provides comprehensive explanations on how the organization is meeting the award criteria. A typical application provides details on the types of approaches used by organizations, the level of deployment of these approaches, and performance results linked to these approaches. Organizations who submitted applications for the award will get a thorough feedback from the assessors on the relative strengths and weaknesses (areas for improvement) of their quality management approaches and get a numerical score for the application.

The assessment process is lengthy and tedious and usually deters many companies from applying for the award; unless they think they are well prepared and are at a stage of their quality journey that gives them a real chance of winning the award. However, the criteria used in King Abdullah II Award for Excellence provide a comprehensive performance assessment of various areas in an organization. Organizations could regularly use the framework to benchmark their current quality performance and identify areas of improvement. Studies findings indicate that companies are increasingly using self-assessment and that the benefits from this approach are quickly realized (Finn and Porter, 1994).

There are many self-assessment tools used by organizations to measure quality performance. Some are survey-based accompanied by ratings, while others could

just be an audit list of questions that require written answers. However, most of these self-assessment tools were developed based on the requirements of a certain organization or a particular industry. These tools usually derive their assessment criteria from specific quality models advocated by a quality specialist. To facilitate wider use of the award criteria, a self-assessment tool in the form of a survey-based questionnaire is needed for measuring the essential elements of the criteria and simplifying the award application process. The award committee in the organizations who are not ready for the actual application of the award but would like to assess their current quality performance level, could then administer such a self-assessment tool.

This paper presents a model that uses the criteria of King Abdullah II Award for Excellence as the basis for creating a self-assessment tool to measure quality performance in Jordanian organizations. The focusing of this paper is on the method in which the items should be derived, the appropriate scoring mechanism to be used, and the validation process that may be implemented. This tool can also be used to examine the internal and external auditing system that helps the organization to improve its performance based on the King Abdullah II Award for Excellence criteria.

## 2. TQM AND KAIIE

In many countries, quality awards based on Total Quality Management (TQM) models exist to motivate organizations at a national level to develop quality improvement activities and to stimulate Total Quality Management (TQM) efforts in organizations (Eriksson, 2003). During the late 1980s, there were two approaches to quality in organizations that gained worldwide predominance: ISO 9000 and TQM. The former consists of an internationally harmonized set of quality standards. The degrees of compliance of an organization to ISO 9000 can be measured through a compliance audit governed by published ISO standards (Hillman, 1994). Enterprises that successfully pass such audits achieve an internationally recognized ISO 9000 registration status.

TQM is a quality-oriented approach that consists of applying a selection of quality management techniques throughout the organization with the aim to increase profitability through focusing on the customer. Total quality management as articulated by Deming, Ishikawa,

Juran and others is a set of power interventions wrapped in a highly attractive package. When implemented, TQM can help an organization improve its performance, products, processes, services, and employees (Hackman and Wageman, 1995). Companies around the world have realized the necessity to emphasize quality as a strategic issue for business success. The efforts of researchers and practitioners resulted in the development of various quality management practices and Total Quality Management (TQM) are the most acceptable among those. This all-encompassing management drive is developed around the core concept of quality with focus on customers and processes (Tripathi, 2005).

It is widely accepted in the field of management that progress through the application of the principles of TQM can, and indeed must, be measured (Saraph et al., 1989). Yet, there is no specific internationally recognized standard that specifies what constitutes the ideal TQM approach, no uniform set of guidelines as to how the application of TQM should be measured, and no registration agency that can attest to an international standard of recognition for achievements through the implementation of TQM. In fact, TQM measurements vary depending on the application, and as such, there exists no universally applicable set of standards. Moreover, progress through the application of TQM methods can only be measured by monitoring process improvements and the variations of outcomes and results. Consequently, the evaluation of the degree of success that can be achieved through TQM involves the review of all organizational successes (NIST, 2001).

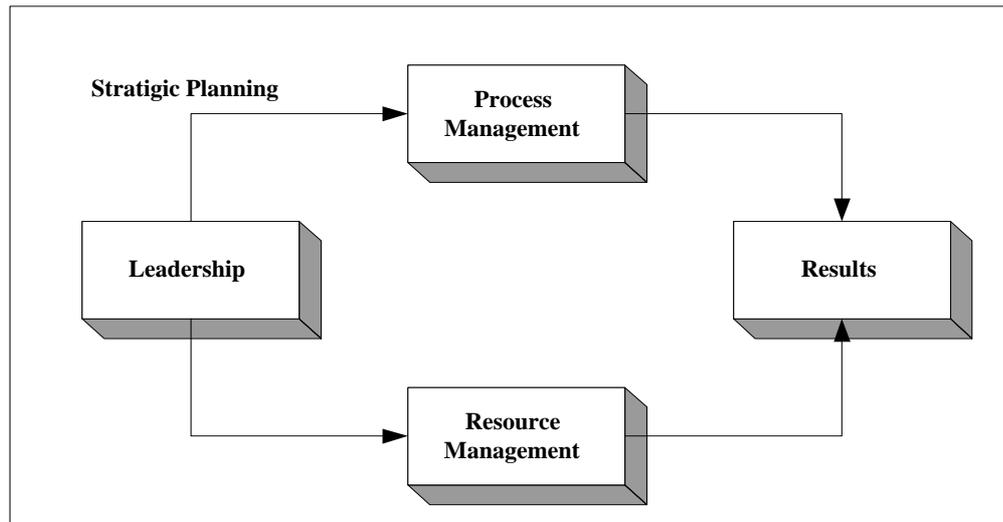
Based on the role that the TQM plays in Jordan, King Abdullah II Award for Excellence was introduced in 1998 to encourage Jordanian industry to produce competitive quality products. Realizing TQM in business, excellence in organizations means that whenever people want to perform an activity, they have to ask themselves for whom of the stakeholders (namely customers, suppliers, employees, shareholders, and community) this action has a value-added impact, and how the activity may influence the relationship with stakeholders. Moreover, within King Abdullah II Award for Excellence Model (see Figure (1)) not only the approach; but also the achievement of an organization with respect to the needs and expectations of the stakeholders have to be considered.

Since this model expects great things from any organization, it was introduced as a driving force to

promote awareness of quality and to accelerate its acceptance as the strategy for survival, growth, and profitability, to enhance local and international competitiveness of Jordanian companies, to assess and improve performance and business results, and to share information on the strategies that lead to successful TQM implementation and adoption (KAIIEA Applicants Handbook, 2000). The criteria for performance excellence provide organizations with an integrated result-oriented framework for implementing and assessing processes that manage all operations. The TQM-based framework of the award consists of five criteria: leadership, strategic planning, process management, resource management, and results. Different weights are assigned to these criteria (150 for leadership, 150 for strategic planning, 250 for resource Management, 200 for Process Management, and 250 for Results) in order to prioritize these criteria according to their importance in the TQM perspective. Furthermore, there are 27 sub-criteria under the five criteria and 82 items to be addressed. The sub-criteria are assessed against four items i.e., involvement, communication, continuous improvement and benchmarking, and adoption, with ultimate score of 10%, 10%, 15%, and 65%, respectively.

### 3. LITERATURE REVIEW

Literature suggests that a self-assessment tool based on quality management business excellence models is helpful. For example, Wilson (1998) stresses that the Business Excellence Model, which is promoted by the European Foundation for Quality Management (EFQM) has been a major stimulus to self-assessment in the UK and throughout Europe. Jones (1999) indicates that ongoing self-assessment using the EFQM business excellence model is systematically helping companies identify and correct gaps in their performance. Senior managers are positively leading successful top companies with a high focus on customer satisfaction, and they are continuously improving their total quality process through a systematic self-management process (Da Silva, 2005). Brereton (1996) suggests that the use of a recognized model will help in carrying out self-assessment quickly and effectively. Accordingly, companies in the European community have successfully used the UK/European Quality Award Model (Karapetrovic and Willborn, 2001).



**Figure 1: King Abdullah II Awarad for Excellence Model.**

A reliable self-assessment tool for quality performance should satisfy two cardinal conditions. First, it should measure what it is supposed to measure; in this case all dimensions of business that are deemed to have impact on overall organization's quality performance. Second, it must be able to measure them correctly; in this case providing a measurement score that is credible and comparable within industry or across industries. Thus, using the national quality criteria as a framework for developing a self-assessment tool and ensuring that its scoring mechanism follows closely the actual national quality award's requirement would satisfy the above two conditions (Wu et al., 1999). Self-assessment models can perform three main tasks: to score the self-assessment submission document; to identify strengths and areas of improvement; and to simulate different scenarios for improvement planning (Li and Yang, 2003).

Several approaches are available for use to carry out self-assessment including: discussion group/workshop methods, surveys, questionnaires and interviews, organizational self-analysis matrices, awards simulation, activity or process audits, and hybrid approaches of the above. However, whichever method is used, the emphasis should be on understanding the organization's strengths and areas of improvement, rather than achieving a score. Self-assessment provides an organization with vital information for monitoring its progress towards its goals and business excellence. The key points to remember are that each approach has its

own merits and limitations; the paramount objective of self-assessment is continuous improvement; and that the most critical phase is action planning and implementation (Shergold and Reed, 1996).

Wu *et al.* (1999) developed a self-assessment instrument based on the seven categories of the Malcolm Baldrige National Quality Award (MBNQA). The objective of their study was to develop a simple and effective self-assessment instrument that can be used in place of a full-scale Baldrige assessment. The objective was addressed by developing an extensive questionnaire to gather data from participating organizations, and then analyzing the data to determine which responses correlated with actual TQM performance. Brown (1997) reported the development of a self-assessment questionnaire to assess an organization's level of quality management practices using the 1997 Baldrige criteria. The questionnaire uses a ten-point scale. Apparently, this survey instrument was not subjected to a rigorous validity and reliability testing.

Pun et al. (1997) introduced a self-assessment quality management system that is compatible with the criteria of the Baldrige Award and conforms to the requirements of both ISO 9000 and ISO 14000. They reported that the developed system in an engineering organization has demonstrated a successful implementation example of using the award criteria for performance excellence. Coleman et al. (2001) addressed the problem of using accuracy index values based on the squared difference between participant scores and true scores for those going

through the Malcolm Baldrige National Quality Award (MBNQA) self-assessment exercise. The exercise discusses a case study where 90 individual participants took part. The scores of these participants were recorded before receiving training (no training) and after receiving it. The accuracy indices appear useful for assessing the rating effectiveness of evaluators.

Prybutok and Stafford (1997) reported the development and use of a self-assessment survey based on MBNQA for a Health Care Organization in the USA. The assessment instrument was developed by examining the content of each major MBNQA criterion. However, it is reported that due to incompleteness of the returned questionnaires, factor analysis, reliability and validity checks could not be carried out. Only descriptive statistics were used to create a profile of current quality management practices in the organization. Quazi *et al.* (1998) used the framework for "critical success factors" in quality management developed by Saraph *et al.* (1989), and they tested the validity of the instrument in the Singapore context. They noted that the critical success factors in quality management are based on the synthesis of published quality literature and not on any national quality award model. The authors suggested that the instrument was robust enough to be used as a self-assessment tool for quality management practices.

Quazi and Padibjo (1998) reported the development and use of a survey instrument based on the Malcolm Baldrige/Singapore Quality Award criteria. A total of 39 items were used in the questionnaire. Descriptive statistics were used to report the quality management practices of the small and medium-sized organizations in Singapore. Lee and Quazi (2001) proposed a development methodology that uses the assessment criteria of the national quality award as the basis for creating a self-assessment tool to measure quality performance in organizations in Singapore. The scores that were obtained using the assessment tool was tested against those of the recent SQA applicants. Results showed significant correlation between the assessment score bands and the actual score bands received on the SQA application. Davidson and Stern (2004) developed a quantitative model that could be used to indicate the presence, and evaluate the effectiveness, of a total quality management program in manufacturing organizations. By incorporating an automation component using information technology and DBMS,

they increased the ease and speed with which the companies can conduct self-assessment for their TQ programs.

Castka *et al.* (2004) discussed self-assessment and benchmarking of intangible assets in teamwork development. They developed a generic model based on EFQM framework that consists of ten criteria (enablers and results) and demonstrated how the model can be applied in organizations and how it reflects the emerging trends in benchmarking practice. Burgess *et al.* (2005) investigated managers' use of self-assessment in diagnostic routines to assist organizations embarking on major organizational change involving the adoption of managerial innovation. They reported that a prior commitment to the methodology contributes to explaining managerial preferences for the non-financial diagnostic tool over the financial one.

All studies, except for Wu *et al.* (1999) and Prybutok *et al.* (1997) attempted to follow closely the criteria laid down by national quality awards. On the other hand, the self-assessment tools discussed above did not do so. The self-assessment tools developed by these authors have not demonstrated that they were capable of providing a measurement of quality performance that is similar to what a pool of quality assessors would have provided if a formal application was submitted at about the same time. Table (1) summarizes the self-assessment tools for the national quality awards.

#### 4. METHODOLOGY

In order to meet the study objective, a questionnaire-based assessment was developed whereby the items to be measured followed the exact nature and structure of the criteria used in the award. The scoring mechanism emulates the scoring guidelines given in the award and also takes into account some of the common scoring practices of the assessors. The goal of assessment methodology is to provide measurement capabilities that emulate the assessment approach of the trained assessors and their scoring pattern experience.

Prior to the development of the self-assessment tool (questionnaire), interview sessions were conducted with some of the award steering committee members and applicants to determine the technical and managerial problems related to the award assessment process. Since the criteria are designed to be non-perspective, assessors were trained to assess the ability of the approaches to

fulfill requirements and not to judge approaches against any specific method. Specific guidelines to identify the key business factors that are needed to fulfill each criterion's requirements were given. The same guidelines were also given to applicants when they were preparing the formal application report.

In order to achieve the best understanding of the award criteria, an analysis model was developed and discussed (see Figure (2)). This model attempts to describe the relationships between the different criteria of the award and the role of each criterion in achieving the organizational results, which derive the success/failure of the organization. The analysis model consists of two major parts: input and output; where the input starts with setting strategic plans by which an organization defines leadership tasks and characteristics, while functional managers are responsible to develop, implement, and review the organization's strategic plan. When coordination between leadership and strategic planning is achieved, the managers set organizational objectives, mission, vision, and policies in a synchronized manner with predetermined overall strategies and harmony between them. If harmonization is achieved, resources and processes are managed with respect to each other and synchronized with overall predetermined strategies. The output is represented by the overall business results, which consist of certain levels of quality, customer satisfaction, employee satisfaction, impact on society, impact on economy and financial results. What leads to the best business results is to achieve the best from the business results' components. Business results determine the organizational success / opportunities for improvements where action plans are to be set and implemented.

After the analysis model was developed as in Figure (2), a questionnaire was set to relate the generic sub-criterion with the award criteria (involvement, communication, continuous improvement and benchmarking and adoption) to all the items in the award. Two levels of assessment were used; level 1 uses a yes/no type questionnaire to determine what the organization has. It is developed to facilitate the assessment process and to eliminate questions related to the (No) answers. It consists of 46 yes/no questions, where each of these questions at least eliminates one item, when it's not applicable to the organization. When an applicant answers all the questions of level 1, he could complete

the self-assessment requirements with level 2 questions. Table (2) shows the self-assessment questionnaires for Level 1.

Level 2 is developed to measure how an organization implements what it has. It consists of 600 questions, which could assess the various implementation methods for a selected item. Before setting the questions, interview sessions were conducted with some of the award assessors to know how they were trained to score formal award application reports, and the scoring guidelines that they have to follow while assessing each separate item. Appendix (1) shows an illustration of the assessment survey of level 2 for leadership criteria and sub-criteria. Level 2 questionnaire is divided into three levels of implementation, i.e., Not implemented, Partially implemented, and Fully implemented. Level 2 questions were grouped into three main categories (A-level, B-Level, C-level questions) depending on the importance of the question and its ability to be applied in Jordan's business environment. The categorization process was done through brainstorming sessions for scoring methodology analysis with several experts, examiners and applicants who participated in the first cycle of the award. During the sessions, the necessary approaches (programs) to be applied in the organization in order to meet the award criteria and the extent of deployment of the applicant's approaches for some other items were identified.

Although analysis of the scoring methodology based its calculation of the total score on assigning weights to the sub-criteria that are the same as those assigned by the award, yet the methodology in finding the scores is different. In the award criteria, items were linked to all the sub-criteria. However, "involvement", "communication" and "continuous improvement and benchmarking" were linked only to the main criteria as a whole. On the other hand, adoption was linked to each item (See Figure (3)). A significant consideration was given to the scoring methodology created while constructing the questions as a result of the brainstorming sessions. The characteristics of the three levels: A, B, and C are as follows:

- A-level questions are those questions related to the situation that must be included in the assessment criteria (must-be questions), and any lack in implementing any will reduce the item adoption score by 60%.





**Table 2: Self-assessment Questionnaires (Level-1 Questions).**

Questions	Yes	No	Omitted Criteria
Does the organization have a clear and documented vision?			1.1.1
Does the organization have an approved documented agenda for education and training?			1.2.1
Does the organization have an assessment and evaluation system for the employees to specify their career paths?			1.2.3, 1.2.2, 1.4.2, 4.1.6, 4.1.5
Does the organization have an approved incentive system?			1.5.3, 1.2.4, 4.1.7
Does the organization participate positively in business associations?			1.2.5
Does the organization have a well-defined financing development system?			1.3.2
Does the organization have an authority delegation system?			1.3.4, 3.4.3
Systems of communication and feedback between employees, suppliers, customers, and general public are well established.			1.3.1, Communication (1, 2, 3, 4,5)
Does the organization have a methodology to specify and implement corrective action?			2.6.3
Does the organization adopt development plans?			1.3.3
Does the organization have a well-defined criterion to select leaders/mangers?			1.4.1
Does the organization offer an appropriate climate for creativity and innovation?			1.5 (all)
Does the organization have a clear documented mission statement?			2.1.1
Does the organization adopt PEST (political, economical, social, and technological) analysis system?			2.2.1
Does the organization apply methods to achieve the best customer satisfaction?			2.2.2, 5.1(all)
Does the organization apply methodologies for gathering and analyzing information, suggestions, and complaints about customers?			3.3.1, 3.3.3
Does the organization apply a system for handling customers' needs?			3.3.2
Does the organization apply a method to select and assess suppliers?			2.2.4, 5.4(all)
Does the organization have documented objectives?			2.3.1
Does the organization have documented strategies?			2.4.1
Does the organization have methodology for monitoring performance and measuring levels of execution?			2.6.1, 2.6.2, 2.6.4
Does the organization apply method to specify competitors and their capabilities?			2.2.3
Does the organization have documented and implemented projects, programs, and action plans due to organizational strategies?			2.5.1,2.5.2
Does the organization have documented policies to prepare, review, adopt, and modernize quality system?			3.1.1,3.1.2, 5.3(all)
Does the organization consider environmental aspects?			3.2(all)
Does the organization have a defined structure?			3.4.1
Does the organization have a defined mechanism for ensuring coordination among stakeholders in the organization?			3.4.2

Does the organization have a well-defined job description?	3.4.4, 3.4.5
Does the organization have methodologies for gathering and analyzing information about employees?	4.1.1,
Does the organization apply welfare program?	4.1.2
Does the organization have an approved complaints and suggestions system?	3.1.3,4.1.3
Does the organization have a defined methodology for employing local citizens?	5.5.1
Does the organization have a recruiting system?	4.1.4
Does the organization have system for specifying, gathering, and utilizing information?	4.2 (all)
Does the organization have an applied and documented budget?	4.3.1
Does the organization apply methods to control financial resources?	4.3.2, 4.3.3
Does the organization apply a system to determine cost of service (based on cost center)?	4.3.4
Does the organization have a system to specify, store and optimize the best use of the material resources?	4.4(all)
Does the organization have research and development projects to handle the need, use, and transfer of technology?	4.5(all)
Does the organization have a defined system to satisfy employees?	5.3(all), 5.2.1
Does the organization have a defined system to analyze and benefit from actual results?	5.1.2, 5.2.2, 5.3.2,5.1.3,5.2.3, 5.3.3, 5.4.3, 5.4.4, 5.6.2, 5.7.2, 5.6.3,5.7.3, 5.6.1
Does the organization have a defined system to substitute imported raw materials, machines with equivalent local ones?	5.5.3
Does the organization measure and analyze financial results?	5.7 (all)
Does the organization involve the stakeholders in the organization activities?	Involvement (1, 2, 3, 4, 5)
Does the organization use any methodology to obtain continuous improvement process?	Continuous improvement (1, 2, 3, 4, 5)
Does the organization have a methodology for assessing the local value added?	5.5.2

- B-level questions are those questions related to the situations that are important to be implemented, but it may be difficult to be applied in Jordanian companies. The fraction assigned to the B-level questions is 25% of the item adoption score.
- C-level questions are those questions related to the situations that are theoretically recognized but still difficult to be applied in the Jordanian companies. The fraction assigned to the C-level questions is 15% of the item adoption score. Examples of that include: implementing an Enterprise Resource Planning (ERP) system, Computer-Aided systems used to track and analyze data for PEST aspects; PEST analysis before vital decisions are finally approved; customers' needs

specified into three types: must requirements, performance requirements, and attractive requirements; continuous revision for the rewards structures to meet changes in responsibilities and change in the expected performance; a well-known documented schedule for all the machines and employees; continuous training and education of the quality team about modern quality techniques and methods; and environmental assurance team that contains: environmental management team, waste management effort, and environmental audit team.

To determine the grades assigned for each of questions' levels, these equations are applied:

$$A\text{-level grade} = X \quad \dots (1)$$

$$\text{B-level grade} = (25/60) * \text{A-level grade} = 0.417 X \dots (2)$$

$$\text{C-level grade} = (15/60) * \text{A-level grade} = 0.250 X \dots (3)$$

$$\text{Item adoption score} = (\text{no. of A-level questions}) * X + (\text{no. of B-level questions}) * 0.417 X + (\text{no. of C-level questions}) * 0.250 X \dots (4)$$

By finding the solution for A-level grade, the grades for all levels could be determined by substituting in equations 2 and 3. To find the final total score, the summation of the questions in each item is recorded, and then the summation of the item's scores for each criterion is recorded and that score will represent (65%) of the final total score (i.e. adoption score). In order to reach 100% of the total final score, generic sub-criteria scores (involvement (10%), communication (10%), and continuous improvement and benchmarking (15%)) are to be added to the total score, and by summing all criteria scores, the final score out of 1000 will be found.

Feedback reports are prepared in order to help organizations to prompt their performance as to meet the award criteria concepts. The feedback reports were developed into two main parts. Part one represents the final feedback report, which describes the overall performance of the organization based on the total final score, and it determines whether the organization is qualified to participate in the award. Table (3) shows the final feedback report based on the score range. On the other hand, part two of the feedback reports are related to each criterion in the award. In this part independent feedback reports are prepared for each single criterion based on the total criterion score. In these reports general guidelines are set in order to help organizations to improve their current understanding of each criterion and advise them to implement the requirements of the award criteria concepts. Table (4) shows an example of leadership feedback reports based on pre-assigned score ranges.

Based on the predetermined KAIIE criteria and analysis model (Figures (1) and (2)), scoring model (Figure (3)), Feedback report format (Table (3)), a self-assessment model was developed and presented in Figure (4). This model shows procedures that an applicant has to follow in order to fulfill the self-assessment process, and consequently, it gives the feedback reports in order to detect the organizational areas of strengths and weaknesses.

## 5. MODEL IMPLEMENTATION AND VALIDATION

In order to study the applicability of the model, Petra for Engineering Industries, the winner of the 2003-2004 award cycle, was selected to implement the model on and to compare between the scores obtained from the proposed model questionnaire and the formal award score. The score from the model questionnaire was analyzed to assess the current position of the company to check the readiness for applying to KAIIE in its next cycle.

Top management at Petra for Engineering Industries was interviewed to fill the model questionnaire. The findings at Petra were very encouraging. They showed coherence and compliance in mostly all criteria. Among others, Petra answers far exceeded what is required from an applicant. In addition, they have a comprehensive, clear, and coherent thought. As for the leadership vision, educational system, support, and selection and suitability, Petra showed compliance and adherence to the requirements of the award criteria. The company's Strategic plan illustrated a well-defined structured mission statement, external environmental analysis, objectives, strategies, and action plans. Pertaining to monitoring and control system, they are implementing a clear methodology for monitoring, controlling, and implementing corrective action plans.

Process Management at Petra indicates strengths related to quality; especially in setting, reviewing, adopting and modernizing the quality system. Petra also has shown adherence and harmony with regard to environmental management system. Their organizational structure is crisp clear, documented and clearly defined to the stakeholders. Additionally, the company has excellent customer relationship's management system. Regarding the issue of Resources Management at Petra, it was found that the company competently plans, develops, enhances, deploys and reviews its resources effectively (e.g. human, information, financial, material, and technological resources). Petra's results are very remarkable since it achieved high satisfaction level for both customers and employees. On the operational performance level, the company again achieved high safety level, on-time delivery, and high quality products at low prices. As a result of their successful methodology in selecting and evaluating suppliers, Petra's suppliers were efficient and in compliance with the requirements and expectations.

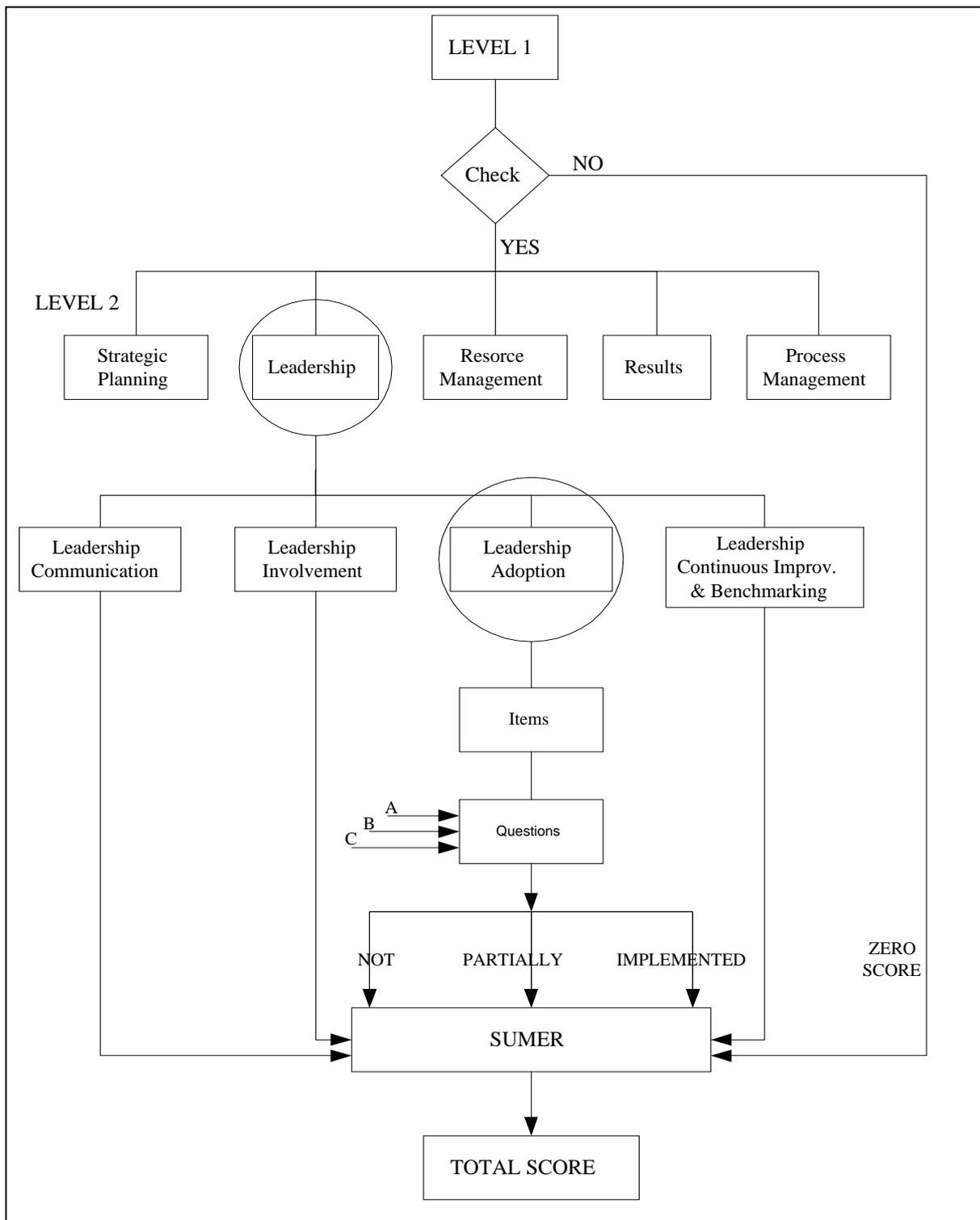


Figure 3: Scoring Model.

**Table 3: Final feedback report based on the score range.**

General Evaluation	Score Range	Feedback
<b>Weak</b>	<b>0%-29%</b>	<ul style="list-style-type: none"> <li>- The organization doesn't have enough understanding for the award criteria concepts.</li> <li>- Management should review the award concepts, and then indicate the reality of the subjects.</li> <li>- Award criteria should be adopted by setting, and implementing action plans.</li> <li>- For more information about the improvement plans in the future, please try to fully implement all the statements mentioned in the questionnaires.</li> </ul>
<b>Not Enough (moderate)</b>	<b>30%-49%</b>	<ul style="list-style-type: none"> <li>- The organization has a moderate understanding for the award criteria and concepts.</li> <li>- Management should review, develop, and update the award criteria concepts in the organization.</li> <li>- Answers are less than what is required to apply and compete.</li> <li>- For more information about the improvement plans in the future, please try to fully implement all the statements mentioned in the questionnaires.</li> </ul>
<b>Accepted, Normal</b>	<b>50%-65%</b>	<ul style="list-style-type: none"> <li>- The organization expresses good answers of the award criteria and concepts.</li> <li>- Systematic methodologies are applied to meet the award criteria.</li> <li>- Answers are similar to what is required to apply for King Abdullah II Award for Excellence (the organization could apply for the King Abdullah II Award for Excellence).</li> <li>- To obtain better performance in applying award criteria concepts, please try to fully implement every single statement mentioned in the questionnaires.</li> </ul>
<b>Good</b>	<b>66%-79%</b>	<ul style="list-style-type: none"> <li>- The organization expresses reasonable distinctive thoughts for the award criteria.</li> <li>- Answers exceed what is required from the King Abdullah II Award for Excellence applicant. (The organization could apply for King Abdullah II Award for Excellence).</li> <li>- To obtain excellence performance in the award criteria, try to fully implement all the statements mentioned in the questionnaires.</li> </ul>
<b>Excellent</b>	<b>80%-100%</b>	<ul style="list-style-type: none"> <li>- The organization is applying excellent award criteria concepts.</li> <li>- The organization has comprehensive and coherent thoughts.</li> <li>- Answers exceed what is required from an applicant to apply for King Abdullah II Award for Excellence. (The organization should apply for King Abdullah II Award for Excellence).</li> </ul>

**Table 4: Leadership feedback reports based on score range.**

General Evaluation	Score Range	Feedback
<b>Weak</b>	<b>0%-29%</b>	<ul style="list-style-type: none"> <li>- The organization doesn't have enough understanding for the leadership criterion concepts.</li> <li>- Management should review the leadership concepts, and then indicate the reality of the subjects.</li> <li>- Leadership criterion should be adopted by setting, and implementing action plans.</li> <li>- For more information about the improvement plans in the future, please try to fully implement all the statements mentioned in the questionnaires.</li> </ul>
<b>Not Enough (moderate)</b>	<b>30%-49%</b>	<ul style="list-style-type: none"> <li>- The organization has a moderate understanding for the leadership criterion and concepts.</li> <li>- Management should review, develop, and update the leadership concepts in the organization.</li> <li>- Answers are less than what is required to apply and compete.</li> <li>- For more information about the improvement plans in the future, please try to fully implement all the statements mentioned in the questionnaires.</li> </ul>

<b>Accepted, Normal</b>	<b>50%-65%</b>	<ul style="list-style-type: none"> <li>- The organization expresses good answers of the leadership criterion and concepts.</li> <li>- Systematic methodologies are applied to meet the leadership criterion.</li> <li>- Answers are similar to what is required to apply for King Abdullah II Award for Excellence.</li> <li>- To obtain better performance in applying leadership criterion concepts, please try to fully implement every single statement mentioned in the questionnaires.</li> </ul>
<b>Good</b>	<b>66%-79%</b>	<ul style="list-style-type: none"> <li>- The organization expresses reasonable distinctive thoughts for the leadership criterion.</li> <li>- Answers exceed what is required from the King Abdullah II Award for Excellence applicant.</li> <li>- To obtain excellent performance in the leadership criterion, try to fully implement all the statements mentioned in the questionnaires.</li> </ul>
<b>Excellent</b>	<b>80%-100%</b>	<ul style="list-style-type: none"> <li>- The organization is applying excellent leadership criteria concepts.</li> <li>- The organization has comprehensive and coherent thoughts.</li> <li>- Answers exceed what is required from an applicant to apply for King Abdullah II Award for Excellence.</li> </ul>

This success story of Petra has launched and accelerated its operations to go beyond the local market and penetrates the regional and even global markets as it captured a reputable mind and market share in these markets. This success in return had its positive and tangible results on the local Jordanian economy, where new jobs were created and more involvement was apparent in the part of Petra in the society through the means of sponsorships and donations. Petra has generated excellent financial results throughout the past years.

However, Petra still needs to improve its performance in developing some issues like: implementing an Enterprise Resource Planning system; developing Computer - Aided systems to be used to track and analyze data for PEST; applying PEST analysis for vital decisions; identifying specific customers' needs; developing rewards structures; implementing a well-known documented schedule for all the machines and employees; and implementing a stringent environmental policy.

To carry out validity and accuracy tests, scores obtained from the questionnaires were compared with formal KAIIE scores related to each of the five criteria of the award. The formal scores that were given in the award could provide a basis for confirming the validity of the self-assessment tool. The total score for "Petra for Engineering Industries" equals to 824, and the actual score obtained from the award assessment for "Petra for Engineering Industries" is 785 (as given by Petra for Engineering Industries Company). Comparison of the results indicates that the difference is 39 grades (4.73%) of "Petra for Engineering Industries" total score that was

obtained from the questionnaire. It can be concluded that at the overall level, scores from the questionnaire and formal award assessment indicate that there is no significant difference. This comparison reinforces the validity and accuracy of the model's questionnaire.

The difference between the scores obtained from the questionnaire and the formal assessment is further analyzed in order to determine its causes. Evidences are not considered when filling out the questionnaire while they are highly considered in the formal application assessment, in other words, every manager thought that he is applying every statement in the questionnaire while in fact the statement itself may be partially implemented or not implemented at all. On the other hand, the score obtained from the questionnaire could be less than the score obtained from the formal assessment. This difference occurs due to the differences between the actual level of implementation and the assigned three levels of implementation in the questionnaire. The problem occurs when the applicant answers "partially implemented" for any statement in the questionnaire. This means that the organization is implementing 50% of the requirements while it may be implementing more than that. Therefore, the score will be less than that obtained from the formal award assessment.

## 6. CONCLUSION

This paper presents a generic self-assessment tool that is based on using a model advocated by KAIIE Award for Excellence criteria. The developed model is designed to incorporate relevant criteria requirements into a

questionnaire, coupled with emulation of the scoring system used in the award applications, and the guidelines used in rating the questionnaire's statements. The output of the self-assessment tool would ensure accurate measurement of organizations' quality performance.

Although there might be a tendency to view survey data as subjective and therefore providing inaccurate assessment, the findings indicated that the overall assessment is highly accurate. The key to reducing errors and subjectivity in the developed self-assessment tool based on survey data is to ensure that the respondents use the statements in the questionnaire from a common datum or baseline as their main reference. Thus, the developed model not only focused on selecting appropriate statements to assess total quality management performance, but it also incorporated guidelines similar to the scoring guidelines used by quality assessors in assessing formal applications. Also, the scoring mechanism is similar to that used in the actual KAIIE award applications. The combination of these three developmental steps – statement development based on award criteria framework, realistic scoring mechanism, and adequate response guidelines, ensure the development of a reliable self-assessment tool.

To evaluate the accuracy of the tool and thus

determine the soundness of the development methodology, a thorough analysis based on an organization (Petra Engineering Industries) that won the award was conducted. Results showed that the difference in scores obtained by this self-assessment tool and from the quality assessors in actual case was relatively small.

It is recommended that the comparison should be based on the sub-criteria score level and the actual sub-criteria scores obtained from formal Award assessment, if it is permitted to be available for the public in the future. More than one organization should be involved in the implementation level as to check for the reliability of the self-assessment tool, where standard deviation and control charts could be analyzed. This could not be achieved since there were only two cycles executed for the award till now. Feedback reports obtained from actual award assessment should be benchmarked to improve self-assessment report format to be more practical and useable.

#### **Acknowledgement**

The author would like to express his thanks and appreciation for Petra for Engineering Industries Company for their help and cooperation in this work.



**Appendix 1: Self-assessment Questionnaires  
(Level-2 Questions) for Leadership Award Criteria**

**1.0 LEADERSHIP**

**1.1 Leadership vision**

**1.1.1 Documented vision**

1. Vision statement:
a. Clear for stakeholders
b. Documented
c. Short and consisting of few lines
d. Realistic
e. Challengeable and achievable
f. Easy to understand
g. Conveyed to all organizational levels
h. Describes what the organization should look like 5-10 years in the future
i. Inspires employees to perform better

**1.2 Leadership educational system**

**1.2.1 Documented, approved training plan**

1. Basic objective of training is to have enough awareness about problem solving
2. Educational training agenda (plan) is prepared and improved
3. Training programs cover all the levels in organization
4. Training courses are experimental and practical
5. Trainers are selected for their
a. Knowledge
b. Enthusiasm
c. Respect for trainees
6. Training budget:
a. Do exist
b. Approved
c. Reflects the need for training
7. Internal and external training courses are allowed

**1.2.2 Training needs assessment**

1. Training assessment system was established
2. Various assessing methods do exist
3. Results of assessment are translated into training needs
4. Employee needs for training are assessed:
a. Periodically
b. When adopting new action
5. Training needs assessment is conducted by specialists and experts
6. Jobs' requirements are considered while assessing employees
7. Employees' differences are considered while assessing training needs

**1.2.3 Training evaluation system**

1. Training is evaluated after each training course
2. Training courses are evaluated through determining its reflection over:
a. Individuals
b. Overall performance of organization
3. Various effective evaluation methods do exist (e.g. tests, interviews, performance tracking, etc.)
4. Training evaluation results are studied and analyzed by specialists and experts
5. Evaluation results are used for Improving training system
6. Trained employees prepare feedback reports to evaluate the training courses that they passed

**1.2.4 Incentives for educational development**

1. Top management helps the employees by:
a. Understanding their talent
b. Assigning them to the best training courses
2. Awards and recognition do exist
3. Awards and recognition system support
a. Financial Motivation
b. Recognizing employees who have made a positive contribution to the organization' success
4. Educated employees are empowered as a type of recognition

**1.2.5 Participation in association**

1. Participation in business association do exist
---

**1.3 Leadership support**

**1.3.1 Communication and coordination methodology**

1. Top management is committed to continuously communicate and coordinate with all organizational levels.
2. periodical meetings are conducted between:
a. General manager and heads of departments
b. Heads of departments and departments' staffs
3. Workforces' complaints, and suggestions are collected periodically and taken into consideration.
4. Customers suggestions and complaints are continuously collected, analyzed, and taken into consideration
5. Suppliers are early involved in the organizational operations
6. periodical meetings are held with shareholders to discuss the current position and achievements.

**1.3.2 Financing development projects**

1. A team of specialist has the responsibility to prioritize development projects.
2. Development projects are financed with respect to their priority

3. A specific budget was assigned to finance research and development projects
4. A fully TQM program is applied and financed.
5. Specific budget was assigned to finance workforces' training and education programs
6. Specific budget was assigned to maintenance system.
7. Specified budget was assigned as an incentive system

**1.3.3 Adopting development projects**

1. Product design team was formed
2. Methods to deal with suppliers are documented.
3. Development teams consider benchmark as an important source for continuously improving.
4. Managers are trained to be problem-solvers.
5. A set of alternatives is always existed to get over problems.
6. Development teams always determine those projects that: <ul style="list-style-type: none"> <li>a. Minimize costs/Maximize profit</li> <li>b. Maximize customer satisfaction.</li> <li>c. Minimize inventory levels.</li> <li>d. Minimize changes in production rate.</li> <li>e. Minimize changes in workforce levels.</li> <li>f. Maximize utilization of plant and equipment</li> </ul>

**1.3.4 Authority delegation**

1. An evaluation system to assess leaders decision making was established
2. Errors in authority delegation are audited.
3. Authority delegation is a bylaw method
4. ERP (Enterprise Resource Planning) system is conducted
5. Un-centralized decision-making system does exist.

**1.4 Leadership selection and Suitability**

**1.4.1 Methodology for selecting leaders**

1. Leaders are selected for: <ul style="list-style-type: none"> <li>a. Educational certification</li> <li>b. Experience</li> <li>c. Attending training courses</li> <li>d. Self-motivation</li> <li>e. Ability to understand human nature, basic needs, and capabilities of employees</li> <li>f. Good morale</li> <li>g. Good communication skills</li> <li>h. Strong personality</li> </ul>
2. Leaders pass special tests and interviews

**1.4.2 Methodology for evaluating performance of leaders**

1. Evaluation system to assess leaders was established
--

2. Evaluation system shows the strength points, and opportunities for improvement
3. Minimum requirements for evaluation system were developed to evaluate against.
4. The evaluation system results: <ul style="list-style-type: none"> <li>a. Ranking employees based on their score in evaluation</li> <li>b. Performance appraisal form</li> <li>c. Placing leaders in the suitable position related to their scores</li> </ul>
5. Action plans (e.g. awareness training courses) are set, in order to improve leaders performance
6. Employees' Comments on evaluation do exist

**1.5 Creativity and innovation**

**1.5.1 Appropriate climate**

1. Top management treats employees with respect
2. Different talents of the employees are respected
3. Enough space to ask questions is provided to the employees
4. Experimentation and risk taking is applied
5. Top management promises are kept
6. Suitable employees are assigned in the suitable position
7. Open environment in which employees can create do exist

**1.5.2 Methodology for adopting new ideas**

1. Employees are supported to learn and grow through <ul style="list-style-type: none"> <li>a. Systematic meetings</li> <li>b. Questionnaires</li> <li>c. Training</li> <li>d. Authority delegation</li> <li>e. Providing employees with information about the goals and measures of success to do great job</li> </ul>
2. Establishing innovative environment
3. New ideas are treated as follows: <ul style="list-style-type: none"> <li>a. Studied and analyzed</li> <li>b. Implemented if applicable</li> <li>c. Checked and reviewed</li> <li>d. Modified (if necessary)</li> </ul>

**1.5.3 Incentive system**

1. Top management provides an incentive environment through: <ul style="list-style-type: none"> <li>a. Empowering employees</li> <li>b. Improving morale and job skills</li> <li>c. Utilizing proper and timely communication skills</li> <li>d. Providing Job security</li> </ul>
--

- e. Providing safe working environment
- f. Performance appraisal to employees about their performance
- g. Deal employees as internal customers
- h. Establishing awarding system to support good performance and innovation

### 1.6 Leadership / involvement

- |  |
|--|
| 1. Stakeholders philosophy is reflected in the vision statement                          |
| 2. All employees in the organization are involved in the training courses                |
| 3. Communication system covers all stakeholders  |
| 4. Authority is delegated to all organizational levels                                   |
| 5. Setting and financing development projects are developed to all organizational levels |
| 6. Managers are selected from all organizational levels                                  |
| 7. All the employees are involved in the incentive system                                |
| 8. Creativity and innovation is applied to all the organization                          |

### 1.7 Leadership / continuous improvement and benchmarking

- |   |
|---|
| 1. Continuous improvement process contains <ul style="list-style-type: none"> <li>a. Ideas generations.</li> <li>b. Planning process</li> <li>c. Execution process</li> <li>d. Evaluation process</li> </ul>  |
| 2. Continuous improvement process contains both quantitative a qualitative methods  |
| 3. Continuous improvement process always seeks to eliminate problems form roots   |
| 4. Benchmarking is used as a basic method to obtain continuous improvement  |
| 5. Sources for determining opportunities for improvement are: <ul style="list-style-type: none"> <li>a. Employees' suggestions</li> <li>b. Research and development processes</li> <li>c. Customer satisfaction inputs</li> <li>d. Benchmarking or any other competitive information</li> </ul> |

## REFERENCES

- Brereton, M. 1996. Introducing Self-assessment - One of the Keys to Business Excellence, *Management Services*, 40 (2): 22-26.
- Brown, M.G. 1997. Measuring Up Against the 1997 Baldrige Criteria, *The Journal for Quality and Participation*, 20 (4): 22-28.
- Burgess, T.F., Shaw N.E., de Mattos, C. 2005. Organizational Self-assessment and the Adoption of Managerial Innovations, *International Journal of Productivity and Performance Management*, 54 (2): 98-112.
- Castka, P., Bamber, J.C., Sharp, J.M. 2004. Benchmarking Intangible Assets: Enhancing Teamwork Performance Using Self-assessment, *Benchmarking: An International Journal*, 11 (6): 571-583.
- Coleman, G.D., Koelling, C.P., Geller, E.S. 2001. Training and Scoring Accuracy of Organizational Self-assessments, *International Journal of Quality and Reliability Management*, 18 (5): 512-527.
- Da Silva, J.G., Tadashi, O., Kikuo, N. 2005. Looking Through and Beyond the TQM Horizon: Lessons Learned from World-class Companies, *The TQM Magazine*, 17 (1): 67-84.
- Davis, R.A., Stading, G.L. 2005. Linking Firm Performance to the Malcolm Baldrige National Quality Award Implementation Effort Using Multi-attribute Utility Theory, *Managerial Finance*, 31 (3): 19-34.
- Davidson, A.R., Stern, L.W. 2004. A Quality Self-assessment Model, *Managerial Auditing Journal*, 19 (7): 859-868.
- EFQM. 1999. The European Quality Award Application Handbook, EFQM.
- Eriksson, H. 2003. Experiences of Working with In-company Quality Awards: A Case Study, *The TQM Magazine*, 15 (6): 397-407.
- Finn, M., Porter, L.J. 1994. TQM Self-assessment in the UK, *The TQM Magazine*, 6 (4): 56-61.
- Hackman, J.R. and Wageman. 1995. Total Quality Management: Empirical, Conceptual and Practical Issues. *Administrative Science Quarterly*, 40: 309-342.
- Hillman G.P. 1994. Making Self-assessment Successful, *The TQM Magazine*, 6 (3): 29-31.
- Jones, A. 1999. Quality Is a Winning Formula, *The British Journal of Administrative Management*, 10-13.
- Karapetrovic, S., Willborn, S. 2001. Audit and Self-assessment in Quality Management: Comparison and Compatibility, *Managerial Auditing Journal*, 16 (6): 366-377.
- King Abdullah II Award for Excellence Applicants Handbook, 2000.
- Lee, P., Quazi, H. A. 2001. A Methodology for Developing a Self-assessment Tool to Measure Quality Performance in Organizations, *International Journal of Quality and Reliability Management*, 18 (2): 118-141.
- Li M., Yang, J.B. 2003. A Decision Model for Self-assessment of Business Process Based on the EFQM

- Excellence Model, *International Journal of Quality and Reliability Management*, 20 (2): 164-188.
- NIST. 2001. Overview of the Criteria for Performance Excellence, National Institute for Science and Technology, Washington, D.C.
- Prybutok, V.R., Stafford, M.R. 1997. Using Baldrige Criteria for Self-assessment, *Marketing Health Services*, 17 (1): 5-48.
- Pun, K.F., Chin, K.S., Henry A.L. 1997. Self-assessed Quality Management System Based on Integration of MBNQA/ISO 9000/ISO 14000, *International Journal of Quality and Reliability Management*, 16 (6): 606-629.
- Quazi, H.A., Padibjo, S.R. 1998. A Journey Toward Total Quality Management Through ISO 9000 Certification - A Study on Small and Medium-sized Enterprises in Singapore, *International Journal of Quality and Reliability Management*, 15 (5): 489-508.
- Quazi, H.A., Jemangin, J., Low, W.K., Chin, L.K. 1998. Critical Factors in Quality Management and Guidelines for Self-assessment: the Case of Singapore, *Total Quality Management*, 9 (1): 35-55.
- Ritter, D. 1993. A Tool for Improvement Using the Baldrige Criteria, *National Productivity Review*, 12 (2): 167-182.
- Saraph, G.V., Benson, G., Schroeder, R.G. 1989. An Instrument for Measuring the Critical Factors of Quality Measurement, *Decision Sciences*, 20 (4): 810-829.
- Shergold, K., Reed, D.M. 1996. Striving for Excellence: How Self-assessment Using the Business Excellence Model Can Result in Step Improvements in All Areas of Business Activities, *The TQM Magazine*, 8 (6): 48-52.
- Tripathi, D. 2005. Influence of Experience and Collaboration on Effectiveness of Quality Management Practices: The Case of Indian Manufacturing, *International Journal of Productivity and Performance Management*, 54 (1): 23-33.
- Wilson, G. 1998. The Impact of the Quality Award Model on Organizational Performance: A Northern Ireland Perspective, *Total Quality Management*, 9 (4/5): 237-240.
- Wu, H.-Y., Wiebe, H.A., Politi, J. 1999. Self-assessment of Total Quality Management Programs, *Engineering Management Journal*, 9 (1): 25-31.

( )

\*