



Comparing the UBEM Vedic matrix and the TQM elements deployment model using principal component analysis

Comparing the
UBEM Vedic
matrix

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Kozo Koura

Kozo Koura and Associates, Tokyo, Japan

Balvir Talwar

Bharat Heavy Electricals Limited, Haridwar, India

Abstract

Purpose – The purpose of this paper is to share the findings of a comparative study of the TQM elements deployment model and the universal business excellence model (UBEM) Vedic matrix. Comparative research of the essence of BEMs incorporated in the TQM elements deployment model and additional points identified in UBEM Vedic matrix will facilitate multi-dimensional business growth.

Design/methodology/approach – The TQM elements deployment model unveils the reasons of enactment and social influence of BEM through review of four major quality awards namely Malcolm Baldrige National Quality Award, European Quality Award, Japan Quality Award, and Deming Prize. UBEM integrates the Vedic philosophy with synthesis of BEMs and emphasizes that the ultimate goal of business is Universal well-being. The study involved inputs from the essence of Vedic hymns incorporated in the Vedic matrix of UBEM and the synthesis of major quality awards incorporated in the TQM elements deployment model using principal component analysis.

Findings – The UBEM Vedic matrix is constructed based on a broad understanding of the Vedic philosophy. The TQM elements deployment model is constructed based on TQM concepts, quality assurance aystem and quality management system. The former can be called a management concept thinking model and the latter can be called a management system thinking model. It is concluded that the sustenance and growth of an enterprise lies in harmonization with global society.

Research implications/limitations – Comparative research is an attempt to integrate the best practices of the West incorporated in the BEM with the Vedic philosophy of the East, which derives infinite creativity, actions and power from the universal laws of Nature. It is an example for researchers to explore several other areas to integrate the best of both worlds (East and West) and provide a new direction for the mankind.

Practical implications – The comparative research provides additional inputs, which may be used during review of the BEMs and national quality awards in the various regions of the world and hence are of relevance to all BEM custodians. The study is expected to help in a review of the national business excellence strategies worldwide.

Originality/value – The paper is one of the first to focus on integration of BEMs and the Vedic philosophy. The UBEM Vedic matrix identifies practicing values and measuring multiple bottom-lines as key to sustainable growth. Its integration with the TQM elements deployment matrix is useful to enhance the effectiveness of BEMs. Principal component analysis methodology used in this paper for comparative study is also useful for comparative studies of the quality award criteria.

Keywords Business excellence model, Total quality management, Philosophical concepts, Quality improvement

Paper type Research paper



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Introduction

The quest for excellence and all-round growth has remained an important objective for mankind since time immemorial. As mankind progressed, several management theories have evolved and have been practiced over the centuries to attain excellence and sustainable growth. Though these management theories were found most suitable in a given environment; the same theory could not give desired results in a different environment. This led to the development of other management theories to overcome the shortcomings of the previous ones. Various business excellence models (BEMs) evolved during the late 1980s and early 1990s incorporating several criteria for measuring excellence and overcoming the shortcomings of an individual management theory. A report of UNECE (2004) says that there are at least 90 quality and business excellence awards in at least 75 countries.

The risk of bias always remains in any model or list of attributes or critical success factors for TQM, because they are always simplification of realities in which companies are operating (Dahlgaard and Dahlgaard-Park, 2005; Harrington, 2004). In this research paper an attempt has been made to minimize this risk of bias through integration of Business Excellence Models (BEMs) and learning from the Vedic philosophy. The MBNQA from the USA, the European Excellence Award (EEA) and the Deming Prize from Japan are BEMs recognized worldwide and are the mothers of other BEMs/NQAs (Bohoris, 1995; McDonald *et al.*, 2002; Hughes and Halsall, 2002; Miguel, 2001; EFQM, 2007; and JUSE, 2006). Thus, authors have primarily focused on integration of these models.

The authors of this paper, from two major Asian economies, have initially worked independently to integrate the BEMs in their respective researches. Later they met in Tokyo at the International Conference on Quality (ICQ'05) organized by JUSE in September 2005. The first author from Japan has worked on the International Development of Quality Award (Koura and Yoshizawa, 2005) based on the review of four major BEMs namely Malcolm Baldrige National Quality Award (2002), European Quality Award (EFQM, 2007), Japan Quality Award (2001), and the Deming Prize (2006) to develop the TQM Elements Deployment Model (Koura and Yoshizawa, 2003). In his research, he has attempted to unveil the reasons of enactment and social influence of these BEMs.

The second author from India has focused on identifying the gaps in BEMs *vis-à-vis* the essence of the Vedic philosophy. He presented a paper on Sustainable growth – the Vedic way” at ICQ'05 (Talwar, 2005). In his research, he has evolved a Vedic matrix for a universal business excellence model (UBEM) through gap analysis of the essence of the Vedic philosophy and BEMs. It identifies certain issues not adequately addressed in the BEMs but emphasized in the eternal Vedic philosophy. The authors felt a need to conduct a comparative study of their respective research works. Accordingly, comparative research on the essence of BEMs incorporated in the TQM Elements Deployment Model and additional points identified in the Vedic Philosophy has been done in this paper. The authors feel that its findings will facilitate multi-dimensional business growth in different cultural environments.

Universal business excellence model (UBEM)

A universal business excellence model has evolved after a review of 94 BEMs and National Quality Awards (e.g. MBNQA, EFQM Model, Deming Prize and Australian

Quality Award (SAIGLOBAL, 2005)) *vis-à-vis* study of Vedic literature. Vedic literature is a huge reservoir of Vedic knowledge as described in *inter alia* Vedas, Puranas, Bhagawad-Gita, Ramayana and Mahabharata. The essence of Vedic philosophy was studied with the help of Vedic scholars and gaps in BEMs *vis-à-vis* Vedic management concepts were identified (Sharma and Talwar, 2004; Talwar, 2002). This led to the development of a UBEM Vedic matrix for empirical study as shown in the Table I.

The UBEM Vedic matrix consists of seven parts (A to G). While the first part (Part A) was focused to capture the effectiveness of the prevailing management practices, the remaining parts (Parts B to G) were focused on the suitability of various Vedic Management concepts not adequately covered in BEMs. The UBEM Vedic matrix emphasizes the practicing of Values by an organisation with focus on globalization to attain sustainable growth. The uniform implementation of Values in every activity of an organization leads to sustainable growth. UBEM focuses on the uniform flow of ideas, knowledge, material, money and innovations in all processes and systems as also advocated in Japanese philosophy for bringing improvements through 5-S, Visual Control, Kaizen, QC Circle, People Involvement (Liker, 2004; Ishikawa, 1989). It emphasizes that for attaining “sustainable success” the organizations need to integrate their Vision with “universal well-being”. Integration of the outcome of the empirical study on the applicability of the UBEM Vedic matrix with synthesis of BEMs led to the evolution of the UBEM as shown in Figure 1 (Sharma and Talwar, 2007).

The UBEM consists of nine criteria and may be called a Management Concept Thinking Model. While six of these criteria – leadership, strategic planning, people value, partner value, customer value, and key business results are the common criteria of contemporary bems, the remaining three criteria – values and process flow, universal well-being and sustainable success are partly covered in the BEMs and have emerged from the empirical study conducted using the Vedic matrix of the UBEM. In this paper, comparative analysis of the UBEM Vedic matrix has been done *vis-à-vis* elements of the TQM elements deployment model (Figure 2).

TQM elements deployment model

The TQM elements deployment model (Figure 2, Table II, Koura and Yoshizawa, 2004) is constructed based on the criteria of the Malcolm Baldrige National Quality Award, the European Quality Award, the Japan Quality Award, the Deming Prize and ISO 9001 (2004). It may be called a management system thinking Model as it is constructed according to a Management System and uses a common standard of comparative research of award criteria features.

Method and process of comparative research

Method

Koura and Yoshizawa (2005) presented the report under the Comparative Analysis of Factor Structure in the World Class Quality Awards, and this method is applied in this research as well. First of all, the UBEM Vedic matrix (second level items 73: upper horizontal side) and TQM deployment table (third level items 180: left vertical side) are constructed into a matrix table as TQM-UBEM elements matrix. “ten points weight” is distributed into second level items of UBEM matrix questionnaires. Then “relation

Part	Second level questionnaire items
A. Effectiveness of business excellence practices (200)	TQ assessment based on BEM Implementation of balanced score card Implementation of six sigma Implementation of quality system (ISO 9000) Implementation of environmental system (EMS 14000) Implementation of occupational health and safety standards (OHSAS 18000) Implementation of 5-S/visual control Employees involvement through quality circles/suggestions/<i>kaizen</i> Conduction of employees satisfaction surveys Conduction of customers satisfaction surveys Joint improvement projects with customers Conduction of partners satisfaction surveys Joint improvement projects with partners Conduction of social audits Joint projects with educational/research institutions Benchmarking Implementation of total productive maintenance Financial excellence through ratio analysis Effectiveness of investment in R&D/technology Others
B. Applicability of ancient wisdom for business excellence (200)	Management consists of scientific knowledge and ancient wisdom beyond science Ancient wisdom defines ethical values focused on well being of the mankind Values define our way of life, business ethics, behavioral pattern, emotional control, etc. and are universally applicable for all organizations Ethical governance is to work for welfare of all stakeholders through organizational culture, policies, systems and actions Many business organizations don't practice Values due to competitive pressures The objective of business is not mere profits, but the physical, financial and mental well being of all its stakeholders and society at large Organizations should sacrifice hefty profits to ensure customer loyalty Management should focus on "giving" rather than "receiving" to be accommodating to employees and other stakeholders The society focus needs to be enhanced in BEM to ensure sustainable growth Integration of ancient wisdom with BEM may lead to evolution of UBEM
C. Value, work culture and long term philosophy (140)	Ethical practices even at financial cost enhance the business growth Values based governance best serves the long-term interest of organization Mere intention to practice Values in business without its actual practice is like doctor's prescription without actual use of medicines by the patient to care disease Practicing values in business lead to the customer retention Practicing values enhance the commitment of employees Transparency in dealings and timely compliance of commitments made lead to win-win situation Every decision, which may adversely affect the interests of any stakeholder should be based on values

Table I.
UBEM Vedic matrix

(continued)

Part	Second level questionnaire items
D. Measuring multiple bottom-lines to enhance business growth (140)	Protection of interests of every living-being and physical environment enhances the image and provides sustainable growth Proactively taking care of needs and expectations of all stakeholders and culture of giving due credit to the individuals/teams of stakeholders enhances profitability Positioning of people as per their competency enhances profitability Enhancement of organizational performance and capabilities is possible only through teamwork and common vision for all stakeholders Essences of ethics lies in living together like brothers and prosper by using the immense resources of the world Long term focus in selection of employees, partners, and resources, e.g. materials, machines, processes, etc. even at higher cost enhances competitiveness Making decisions slowly by consensus, thoroughly considering all options even at the cost of immediate goals is a better way of working Earning money should not cause any adverse impact on any living being Earning money should not cause any physical harm to employees or other stakeholders Money should be earned through legitimate means and own efforts and not fetched from the efforts of others Earning process should not be an impediment to learning process Continuous flow of products, knowledge, information and money outside the organization is essential profitability and business growth Like breath, continuous flow of material, information and money with-in the organization is essential to bring down the cost and enhances quality Eliminating impediments in flow leads to increased production and reduced costs Organizations should focus on measuring multiple bottom-lines viz physical, financial, mental, spiritual and social bottom-lines in order to understand their real level of excellence and attain sustainable growth Senior executives should focus on enhancing the use of education, values, principles and wisdom Senior executives should observe three types of self-discipline namely, self-guilt, fear of god and fear of society Organizational flexibility can be achieved through cross-functional teams and joint working with stakeholders with a common vision Organizations should protect interests of global society even at the cost of customer interests Organizations should protect customer interests even at the cost of interests of partners, suppliers, employees and shareholders Joining hands with customers, suppliers, educational institutions, social organizations, etc. reduces the global cost of products and services Organizations should follow its systems with continual improvement Organizations should follow its systems with continual improvement focus to fulfill desires of all stakeholders To achieve growth organizations should “respect, challenge and grow” its employees and partners Developing common vision, transparency in dealings, sharing of knowledge and profits with partners, customers and global society lead to sustainable growth The dual focus: 1. Sharing a common vision with partners and customers; 2. Distribution of wealth to enable new areas of business sprout up; generates the positive currents amongst global society and lead to multi-fold growth in the business
E. Fulfilling desires of stakeholders and global society (100)	

(continued)

Table I.

Part	Second level questionnaire items
	Considering poor as customers and developing products, services, technology, pricing policy accordingly leads to higher volumes and brings down cost and ensures viability of the continual growth Like breath, continuous flow of products and services to everyone globally is essential for continual growth Joining hands with customers, suppliers, institutions and society etc. to ensure the steady flow of information, knowledge, money and material for global society provides sustainable growth and prosperity While sharing profits, shareholders/investors should get lion's share followed by employees, partners/suppliers, customers, government and society respectively in descending order Integrating business goals with laws of nature help materializing "global vision" and provide sustainable growth and success for the organization Sacrificing the short-term gains for the sake of larger interest of global society leads to long term gains for the organization
F. Sustainable growth through continuous improvement and learning (100)	Creating a learning environment for excellence gives inherent happiness to all Having a global vision and providing resources to fulfill it leads to multi-fold growth Continuous improvement and acquisition of knowledge create learning environment In learning environment, every member of organization is devoted to enhance his knowledge to facilitate the improvement process Success lies in creating an environment where every member of the organization is not content with his own welfare alone, but every one looks after welfare of others Organization should subordinate itself to the common welfare of society while it is free to act for its own welfare Continuous focus on making efforts and contentment with results achieved is better business policy then focusing on achieving results at any cost Enabling continuous and steady flow of products, services, information and knowledge for global society is ultimate goal of an organization When every member of the organization is able to correlate his personal goals with the organization, he intends to put-in his creativity, learning and best efforts In essence excellence lies in the common vision of all stakeholders, universal brotherhood and equitable distribution of prosperity
G. Vedic model of governance (120)	Vedic model of governance emphasizes three independent bodies namely – administrative council, wisdom council and ethics council Administrative council facilitate in managing day-to-day operation Wisdom council focuses on creating learning environment in order to enhancing skill and competency levels of all stakeholders Ethics council enhances implementation of the value system These three councils should administer the control over one another so that the decisions are taken collectively without any individual bias

Table I.

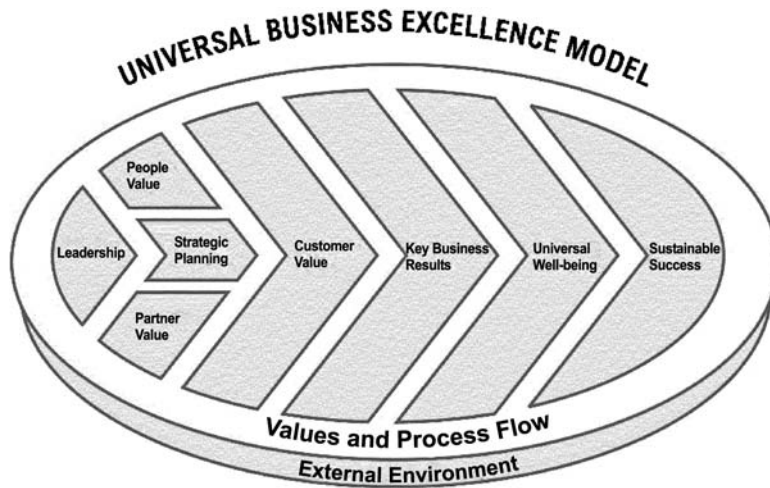


Figure 1.
Framework of universal
business excellence model

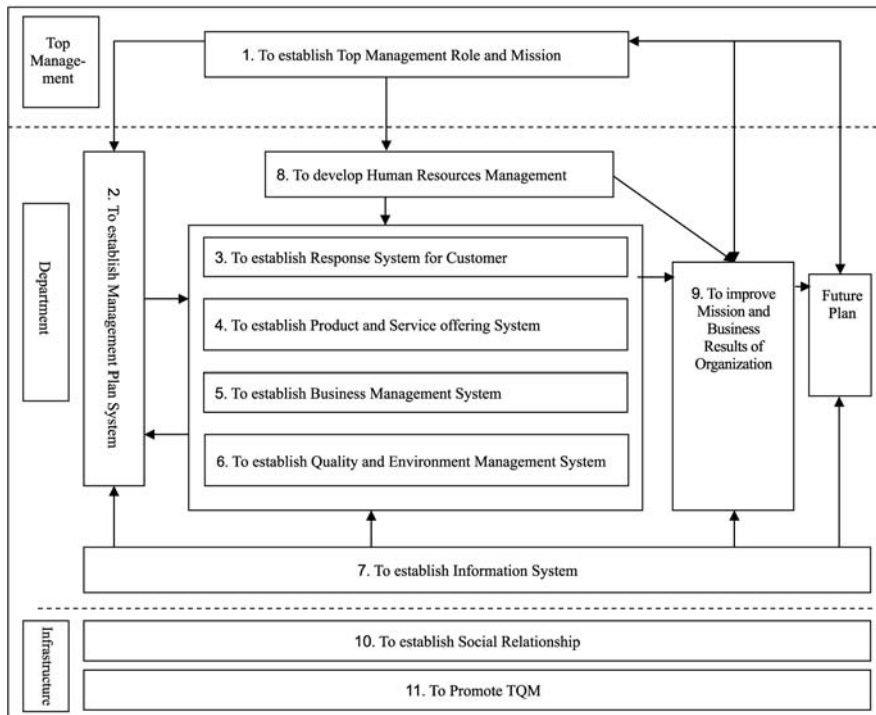


Figure 2.
TQM elements
deployment model
framework

First level element	Second level element
To establish top management role and mission	1.1 To recognize top's role and mission 1.2 To achieve top's role and mission
To establish management plan system	2.1 To forecast business environment 2.2 To establish strategic management plan system 2.3 To establish policy and strategy 2.4 To declare policy and strategy 2.5 To deploy policy and strategy 2.6 To ensure long-term profit
To establish response system for customer	3.1 To establish response method for customer 3.2 To understand and evaluate quality of response for customer 3.3 To structure customer-relationship 3.4 To manage customer-relationship system 3.5 To improve customer-relationship
To establish product and service offering process	4.1 To confirm feature, value, and importance of product and service 4.2 To survey customer and market 4.3 To use for customer and sales information 4.4 To establish customer response system 4.5 To improve customer satisfaction degree
To establish business management system	5.1 To understand quality of business and environment 5.2 To focus on business connections 5.3 To perform business management 5.4 To establish fiscal resources and asset management 5.5 To establish group-wide quality management process 5.6 To appropriately correspond to local society
To establish quality and environmental management system	6.1 To fully comply with quality, environmental regulations and standard 6.2 To accomplish quality assurance. 6.3 To achieve quantity, delivery date, and cost management 6.4 To accomplish managing and improving of process
To establish information system	7.1 To structure information system 7.2 To fully utilize information system
To develop human resources management	8.1 To establish basis of human resources development 8.2 To establish education and training environment 8.3 To improve results of human resources development
To improve mission and business results of organization	9.1 To emphasize quality of management 9.2 To conduct management review 9.3 To achieve mission of organization 9.4 To improve stockholder relationship 9.5 To improve business results
To establish social relationship	10.1 To understand quality of social relationship 10.2 To fully comply with society related regulations 10.3 To accomplish social responsibility 10.4 To improve corporate images
To promote TQM	11.1 To disseminate who is key for understanding and leadership of TQM 11.2 To announce for feature in TQM of own company 11.3 To announce TQM vision, policy, and strategy 11.4 To promote and manage TQM 11.5 To implement for cross-business element management 11.6 To implement for group-wide quality management

Table II.
TQM elements
deployment model

degree (strength of relation)" is weighed between TQM deployment third level items and UBEM matrix questionnaires second level items. It is followed by calculation of relation index as in the following:

$$\text{Relation index} = \text{Relation degree} \times \text{Evaluation distribution points}$$

Relation index is summed up by second level elements in TQM-UBEM elements matrix and principal component analysis is calculated on the matrix and then component score > 0.6 is extracted as factor loading. In the end, the component structure is prepared and analysed for each part of the UBEM Vedic matrix questionnaires.

Process

The following steps were taken for the comparative research:

- (1) The UBEM Vedic matrix is constructed with each part of second level questionnaire item and the evaluation weight (total = 1,000 points) is distributed into each item by design.
- (2) The matrix table is prepared between each part of second level questionnaire items, table and the TQM elements deployment model (Table II by second level element), and the questionnaire item evaluation points are distributed. The matrix of 180 elements $\times$ 73 Items is prepared and it is called the "TQM-UBEM elements matrix".
- (3) "Relation degree" (relation strength (blank: 0, weak: 1, normal: 2, strong: 3)) is weighed between the TQM element and questionnaire Item into each crossing cell in the "TQM-UBEM elements Matrix" (Table III). Relation degree of vertical column "TQM element" is compared further cell-wise for degree of enumeration insertion from horizontal columns of each questionnaire and the correspondence of the strength judgment of relation degree is checked.
- (4) The relationship index of TQM-UBEM elements matrix (180 $\times$ 73) is calculated as: relationship index = relation degree $\times$ evaluation distribution points. It is partially shown in Table IV.
- (5) The TQM-UBEM elements matrix is prepared with the relationship index summed up by second level element in the TQM elements deployment model, and the small size TQM UBEM elements table (48 $\times$ 73) is constructed. It is shown partially in Table V.
- (6) Principal component analysis is carried out for the TQM-UBEM elements matrix using JUSE-Statworks/V4.0 (statistical calculation software developed by Institute of Japanese Union of Scientists and Engineers). The component elements are shown in Table VI. Each principal component is explained by second level TQM Element > 6.0 of Component Score in TQM elements deployment model.
- (7) The component structures are analyzed. The 73 items of the UBEM are compared to the nine component elements. Factor loading was done at three levels, namely > 6.0 , > 4.5 and < 4.49 .

Table III.
Upper left part of
TQM-UBEM elements
matrix (step 3)

TQM UBEM element matrix		Part A: capture the best practices of various organization (200)					UBEM-Vedic matrix		
		1 Top's role and mission are established	1.1 Top's role and mission are recognized	1.1.1 Top's role and mission are understood	1 TQ assessment based on business excellence model	Implementation of balanced score card	Implementation of six sigma	3	4 Implementation of quality system, e.g. ISO 9000
					10	10	10	10	10
TQM elements deployment table	1 Top's role and mission are established				3	0	0	0	3
	1.1 Top's role and mission are recognized				3	0	0	0	3
	1.1.1 Top's responsibility and authority are understood								
	1.2 Top's role and mission are carried out				0	0	0	0	0
	1.2.1 Vision, mission and value ethics of enterprises are developed								
	1.2.2 Systems that achieves mission of organization in premeditation is maintained				3	3	0	0	0

Note: Put weight by close relationships is shown

TQM UBEM element matrix		UBEM-Vedic matrix			
		Part A: capture the best practices of various organization (200)			
		1 TQ assessment based on business excellence model 10	2 Implementation of balanced score card 10	3 Implementation of six sigma 10	4 Implementation of quality system, e.g. ISO 9000 10
TQM elements deployment table	1 Top's role and mission are established	30	0	0	30
	1.1 Top's role and mission are recognized				
	1.1.1 Top's role and mission are understood				
	1.1.2 Top's responsibility and authority are understood	30	0	0	30
	1.2 Top's role and mission are carried out	0	0	0	0
	1.2.1 Vision, mission, value and ethics of enterprises are developed				
	1.2.2 System that achieves mission of organization in premeditation is maintained	30	30	0	0

Note: Calculate for relation index by relation degree × evaluation distribution points

Table IV.
Upper left part of
TQM-UBEM elements
matrix (step 4)

Table V.
Upper left part of
TQM-UBEM elements
matrix (step 5)

Part A: capture the best practices of various organization (200)									
UBEM-Vedic matrix									
1 TQ assessment based on business excellence model									
2 Implementation of balanced score card									
3 Implementation of six sigma									
4 Implementation of quality system, e.g. ISO 9000									
10									
TQM UBEM element matrix	1 Top's role and mission are established	1.1 Top's role and mission are recognized	1.2 Top's role and mission are carried out	60	0	0	60		
TQM elements deployment table				30	30	0	0		

Note: Summed relation index between TQM element deployment 2nd level items and UBEM-Vedic 2nd level items

			Comparing the UBEM Vedic matrix
Component No	Description	Corresponds to TQM elements-deployment model Description	
1	Global management based on human resources development	8.1 To establish basis of human resources development 8.2 To establish education and training environment 11.2 To announce for feature in TQM of own company	425
2	Human resources development	8.1 To establish basis of human resources development 8.2 To establish education and training environment 8.3 To improve results of human resources development	
3	Global management of customer market satisfaction	4.2 To survey customer and market 11.2 To announce feature in TQM of own company	
4	Customer market survey	11.4 To promote and manage TQM 3.2 To understand and evaluate Quality of Response for Customer.	
5	Global management of partner, supplier, and social relationship	4.2 To survey customer and market 5.5 To establish group-wide quality management process 10.3 To accomplish social responsibility 11.6 To implement for group-wide quality management	
6	Social responsibility	10.3 To accomplish social responsibility	
7	Quality assurance of products and services, and its results	4.1 To confirm feature, value, and importance of products and services 6.2 To accomplish quality assurance 9.4 To improve stockholder relationship	
8	Global management focus on quality assurance and partners and suppliers	4.1 To confirm feature, value, and importance of products and services 5.5 To establish group-wide quality management process 6.2 To accomplish quality assurance	
9	Promotion of total quality management	11.4 To promote and manage TQM	

Table VI.
Results of principal
component analysis on
TQM-UBEM elements
matrix

(8) Analysis of results and conclusion. Analysis of the results is carried out and shown in the seven figures according to each part of UBEM Vedic matrix (main questionnaires/total questionnaires) as follows:

- Part A: Effectiveness of business excellence practices (nine to 20 items);
- Part B: Applicability of ancient wisdom for business excellence (seven to ten items);
- Part C: Values, work culture and long term philosophy (six to 14 items);
- Part D: Measuring multiple bottom-lines to enhance business growth (nine to 14 items);

- Part E: Fulfilling desires of stakeholders and global society (seven to ten items);
- Part F: Sustainable growth through continuous improvement and learning (seven to ten items);
- Part G: Vedic model of governance (four to five items).

Each main item in each part corresponds to nine component elements and connected by thick lines indicating factor loading of > 6.0. These figures are called “Principal Component Structure”.

Comparative analysis

The principal component structure of each part is explained by thick lines connecting the points of UBEM (left) and component number (right) in Figures 3-9.

Part A, Effectiveness of business excellence practices

Principal component structure for effectiveness of business excellence practices is shown in Figure 3. It is concluded that three best practices for business excellence are:

- (1) employee involvement in improvement activities (namely quality circle, 5-S, *kaizen*) with focus on quality system, customers, suppliers and society;
- (2) survey of the satisfaction of employees, customers/dealers and venders/partners; and
- (3) joint improvement projects with suppliers/dealers and education/research institutes.

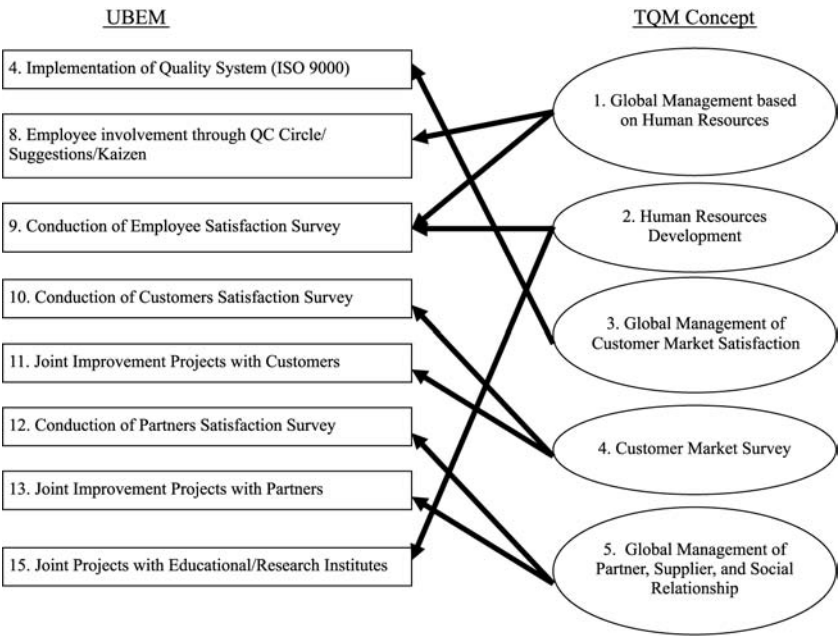
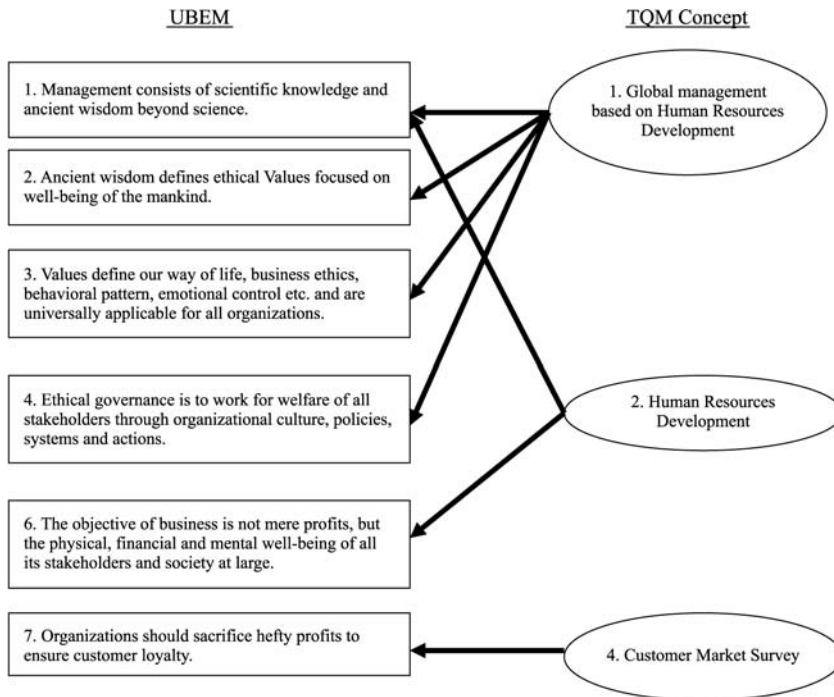


Figure 3.
Effectiveness of business
excellence practices



Comparing the UBEM Vedic matrix

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Figure 4.
Applicability of ancient wisdom for business excellence

Thus, it can be concluded that increased involvement, cooperation and team work amongst all employees of an organisation and its stakeholders i.e. customers, suppliers and society in general enhances excellence. Vedic philosophy strongly endorses this concept, e.g. hymn says: “*Samana Sadeva*” which means “People with same divine thoughts grow together”.

Part B. Applicability of ancient wisdom for business excellence

The principal component structure for the applicability of the UBEM (ancient wisdom) for business excellence is shown in Figure 4. Interestingly, during the empirical study of the UBEM Vedic matrix these points got highest mean score and low variance.

It is thus concluded that global management consists of not merely modern scientific knowledge, but also ancient wisdom, which is useful for the concepts of human resources development and customer satisfaction. The objective of business is not merely profits, but the physical, financial and mental well being of all stakeholders and society at large. Practicing human values and ethics to ensure the well-being of mankind and stakeholders enhances customer loyalty.

Part C. Values, work culture and long term philosophy

The principal component structure for values, work culture and long-term philosophy is shown through thick lines in Figure 5.

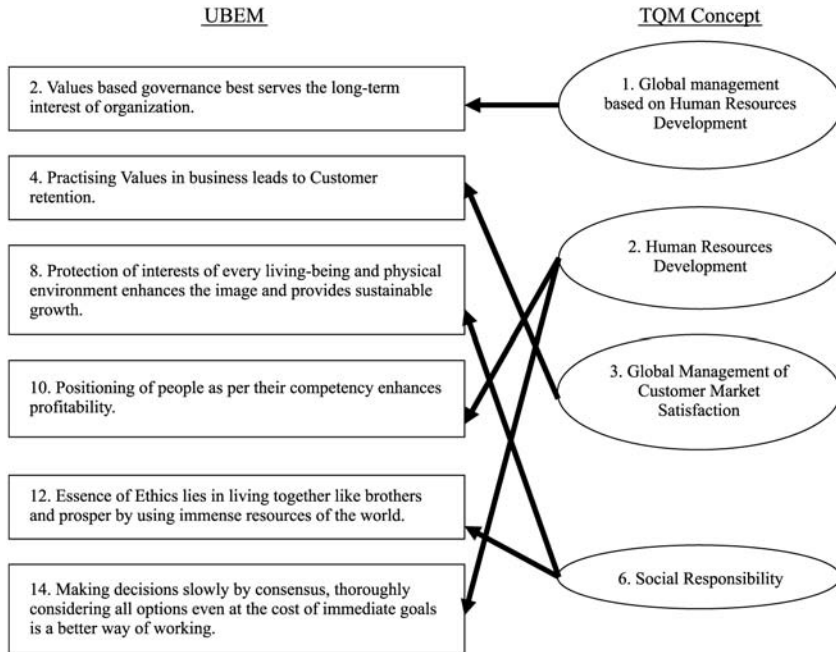


Figure 5.
Values, work culture and
long term philosophy

It is concluded that values, work culture and long term philosophy are contributory to:

- enhancing employee competency levels and better working environment;
- business continuity and social responsibility; and
- sustainable growth of organizations by eliminating all ills and attainment of peace for all.

In other words, we may say that the businesses which focus on short-term gains and use unethical means to earn profits cannot sustain their profitability in the long term.

Part D. Measuring multiple bottom-lines to enhance business growth

The principal component structure for measuring multiple bottom-lines to enhance business growth is shown through thick lines in Figure 6.

It is concluded that measuring multiple bottom-lines, namely physical, mental, spiritual and social bottom-lines is a role for organizations and their senior executives. It increases profitability, reduces cost and leads to the achievement of the organization's objectives through:

- use of education, values, principles and wisdom;
- formation of cross-functional teams within the organisation;
- joint working with stakeholders for continuous flow of materials, products, knowledge, information and money;

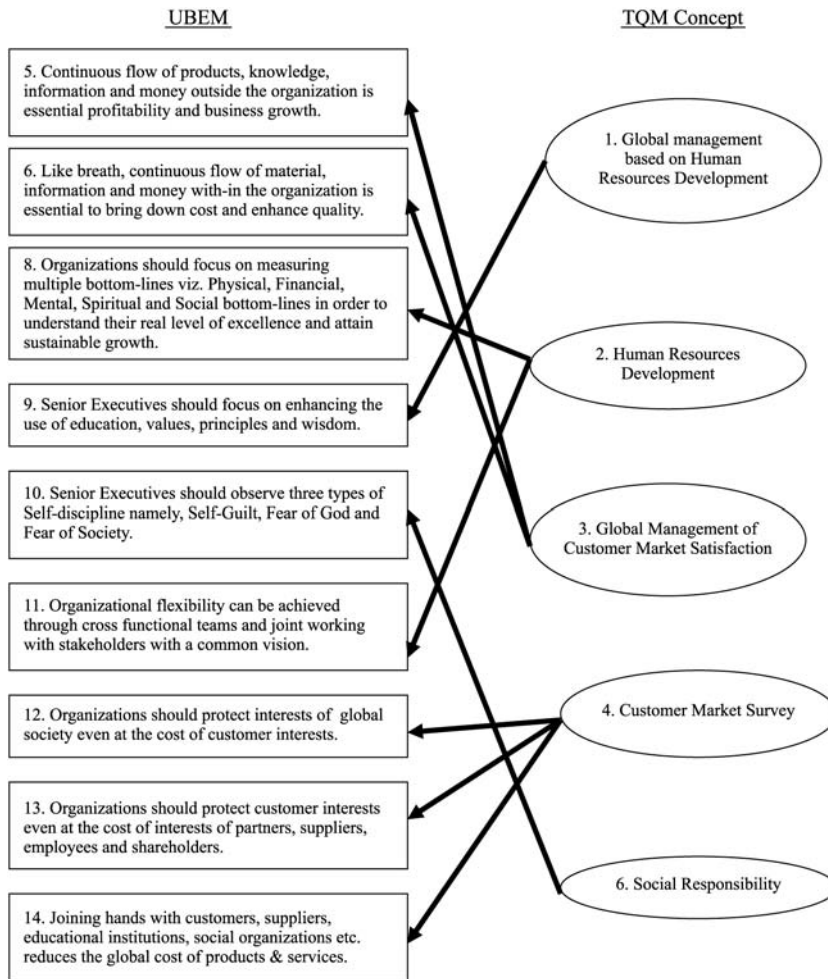


Figure 6.
Measuring multiple
bottom-lines to enhance
business growth

- protecting the interests of global society; and
- observance of self-discipline by senior executives.

Part E. Fulfilling desires of stakeholders and global society

The principal component structure for fulfilling desires of stakeholders and global society is shown through thick lines in Figure 7.

It is concluded that continual improvement in long term gains for employees, partners, customers and society at large is needed for sustainable growth. It can be achieved through a global vision based on the laws of nature. In other words, integrating business goals with the laws of nature helps in materializing global vision and provides sustainable growth and success for an organization.

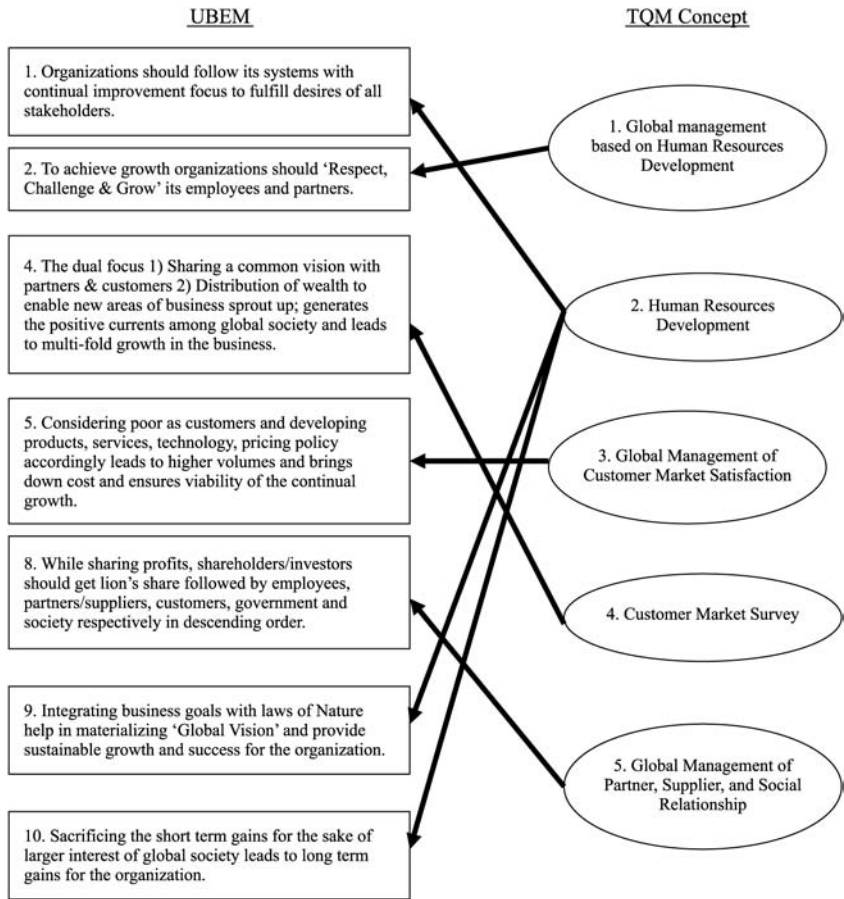


Figure 7.
Fulfilling desires of
stakeholders and global
society

Part F. Sustainable growth through continuous improvement and learning

The principal component structure for sustainable growth through continuous improvement and learning is shown through thick lines in Figure 8. During the empirical study of the UBE M Vedic matrix these points got the highest mean scores and low variance.

It is concluded that creating a learning environment is essential for an organization to attain sustainable growth. The learning environment leads to enhancing people's creativity, happiness and building a common vision with stakeholders. In other words, when every member of an organization is able to correlate his/her personal goals with that of the organization, s/he puts-in her/his best efforts and voluntarily shares her/his creativity and learning.

Part G. Vedic model of governance

The principal component structure for the Vedic model of governance is shown through thick lines in Figure 9. The Vedic model of governance emphasizes three

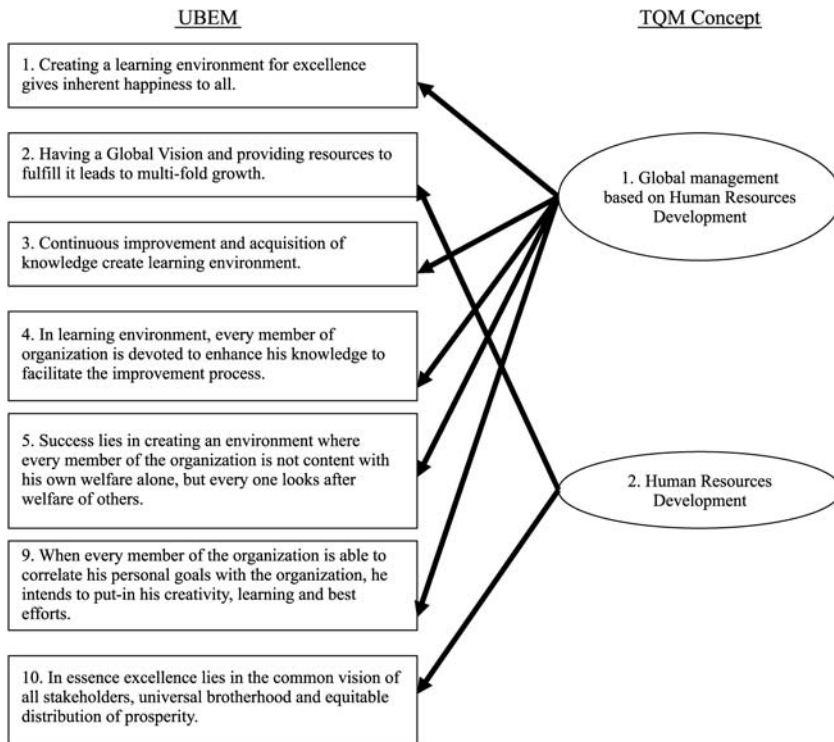


Figure 8.
Sustainable growth
through continuous
improvement and learning

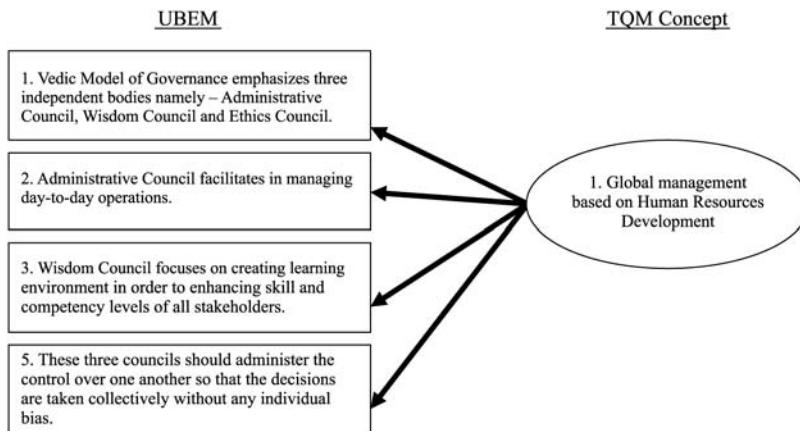


Figure 9.
Vedic model of
governance

independent bodies namely – Administrative Council, Wisdom Council and Ethics Council, facilitated by the Chief Executive.

It is concluded that the Vedic model of governance leads to global management based on human resources development. The global management concept is also the central theme of the UBE M.

Conclusion

This comparative research is concluded as follows:

- (1) The UBEM Vedic matrix (Table I) is compared with the TQM elements deployment model (Table II) by the principal component analysis method. Table VII shows the summary table of the UBEM Vedic matrix parts and the principal components of the TQM-UBEM elements matrix. The three features of the UBEM Vedic matrix namely “human resources” “customer market” and “partner, supplier and social responsibility” as shown in the table are common focal points based on the concepts of ancient philosophy and global society. As a result, it can be called “global management”.
- (2) The UBEM Vedic matrix is constructed based on a broad understanding of the Vedic philosophy. The TQM elements deployment model is constructed based on TQM concepts, quality assurance and quality management systems. The characteristic words in the UBEM Vedic matrix are as follows:
 - Universal well-being (see Figure 1);
 - Ancient wisdom going beyond science (see Part B: 1);
 - Geographical boundaries (see Part B: 3);
 - Immense resources of the world (see Part C: 12);
 - Global cost of products and services (see Part D: 14);
 - Global society (see Part E: 3);
 - Laws of nature (see Part E: 9); and
 - Global vision (see Part F: 2).

These words cannot be found in the TQM elements deployment table.

Also the UBEM Vedic matrix items from Part A to Part G do not correspond to the following component factors (see Table VII),

- Quality assurance of products and services, and its results;
- Global management on quality assurance and partners and suppliers; and
- Promotion of TQM.

As a result, the former can be called a management concept thinking model and the latter can be called a management system thinking model.

- (3) The findings of the empirical study of the UBEM Vedic matrix validate the findings of the comparative research to a large extent. It also identifies some of the gaps in current BEMs especially for giving more focus on practicing organisational values or ethics such as universal well-being to serve global society.
- (4) These models are simple so that a combination of the two is very useful for reviewing contemporary business excellence models.
- (5) It may thus be concluded that the long-term success of an enterprise depends on its harmonization with global society
- (6) The comparative analysis method used in this paper for comparing the TQM elements-deployment model and the UBEM Vedic matrix is useful for the custodians of other BEMs for future studies.

Principal components of TQM-UBEM elements matrix									
UBEM Vedic matrix parts	Global management resources development based on human resources	Human resources development	Global management of customer market satisfaction	Customer market survey	Global management of partner, supplier, and social relationship	Social responsibility	Quality assurance of product and services, and its results	Global management on quality assurance and partners and suppliers	Promotion of TQM
A	2	2	1	2	2	0	0	0	0
B	4	2	0	1	0	0	0	0	0
C	1	2	1	0	0	2	0	0	0
D	1	2	2	3	0	1	0	0	0
E	1	3	1	1	1	0	0	0	0
F	5	2	0	0	0	0	0	0	0
G	4	0	0	0	0	0	0	0	0
Sum	18	13	5	7	3	3	0	0	0
Note: Component score > 6.0									

Table VII.
UBEM Vedic matrix
component factor relation
table

(7)

Integration of the UBEM Vedic matrix and TQM concept is a useful and important concept for practicing managers. For example, concepts like universal well being, immense resources of the world, laws of nature, global society and global vision of UBEM Vedic matrix, when added to the concepts of customer and environment and corporate social responsibility orientation and human resource development, lead to the concept of global management and global vision.

References

- Bohoris, G.A. (1995), "A comparative assessment of some major quality awards", *International Journal of Quality & Reliability Management*, Vol. 12 No. 9, pp. 30-43.
- Dahlgaard, J.J. and Dahlgaard-Park, S.M. (2005), "In search of excellence – past, present and future", paper presented at International Conference on Quality (ICQ'05), Tokyo, September 13-16.
- EFQM (2007), *EFQM Excellence Award*, available at: www.efqm.org/
- Harrington, H.J. (2004), "The fallacy of universal best practices", *Total Quality Management & Business Excellence*, Vol. 15 Nos 5-6.
- Hughes, A. and Halsall, D.N. (2002), "Comparison of the 14 deadly diseases and the business excellence model", *Total Quality Management*, Vol. 13 No. 2, pp. 255-63.
- Ishikawa, K. (1989), *Introduction to Quality Control*, JUSE Press, Tokyo, p. 68.
- JUSE (2006), *The Deming Prize*, available at: www.juse.or.jp/e/deming/index.html
- JUSE (2006), *The Deming Prize Bookmark*, The Deming Prize Committee, Union of Japanese Scientists and Engineers, Tokyo.
- Japan Quality Award (2001), *Performance Excellence Driven by Customer*, Japan Quality Award Committee Administration Foundation of Socio-Econ Productivity Center, Tokyo.
- Koura, K. and Yoshizawa, T. (2003), "Research of TQM elements in the National Quality Awards in the World and ISO 9001", *Journal of the Japanese Society for Quality Control*, Vol. 33 No. 2, pp. 73-85.
- Koura, K. and Yoshizawa, T. (2004), "Comparative analysis of factor structures in the World Class Quality Awards – using the deployment table of TQM elements as an anchor", *Journal of the Japanese Society of Quality Control*, Vol. 33 No. 2, pp. 86-95.
- Koura, K. and Yoshizawa, T. (2005), "International development of quality award", On-site Program and Abstract Collection, No. 0027, 267, paper presented at International Conference on Quality (ICQ'05), Tokyo, September 13-16.
- Liker, J.F. (2004), *The Toyota Way*, TATA McGraw-Hill, New York, NY.
- McDonald, I., Zairi, M. and Idris, M.A. (2002), "Sustaining and transferring excellence", *Measuring Business Excellence*, Vol. 6 No. 2, pp. 20-30.
- Malcolm Baldrige National Quality Award (2002), *Criteria for Performance Excellence*, United States Department of Commerce Technology Administration, National Institute of Standards and Technology, Gaithersburg, MD.
- Miguel, P.A.C. (2001), "Comparing the Brazilian national quality award with some of the major prize", *The TQM Magazine*, Vol. 13 No. 4, pp. 260-72.
- SAIGLOBAL (2005), *Australian Business Excellence Framework*, available at: www.sai-global.com/ABEF/PROJECTS/BRAWARDS/BUSINESS%20FRAMEWORK/ABEFHOME/ABEFBRAWARDS-BUSINESSFRAMEWORK-ABEFHOME.HTM

-
- Sharma, A.K. and Talwar, B. (2004), "Business excellence enshrined in Vedic (Hindu) philosophy", *Singapore Management Review*, Vol. 26 No. 1, pp. 1-19.
- Sharma, A.K. and Talwar, B. (2007), "Evolution of universal business excellence model incorporating Vedic philosophy", *Measuring Business Excellence*, Vol. 11 No. 3, pp. 4-20.
- Talwar, B. (2002), "Corporate excellence journey and Vedic vision", in Dhamija, S.C. and Singh, V.K. (Eds), *Vedic Values and Corporate Excellence*, Gurukul Kangri University, Haridwar, pp. 35-46.
- Talwar, B. (2005), "Sustainable growth – the Vedic way", Tokyo, On-site Program & Abstract Collection, No. 0015, 257, paper presented at International Conference on Quality (ICQ'05), September 13-16.
- UNECE (2004), *National Quality Award Schemes*, September, available at: www.unece.org/indust/sme/Q-national-award.html

Further reading

- Ishikawa, K. (n.d.), *QC Circle Headquarters: How to Operate QC Circle Activities*, JUSE, Tokyo.
- Jackson, E. (1991), *A User's Guide to Principal Components*, Wiley Series in Probability and Statistics.
- Jolliffe, I.T. (2002), *Principal Component Analysis*, Springer Series in Statistics.
- QC Circle Headquarters (n.d.), *QC CIRCLE KORYO – General Principle of the QC Circle*, Union of Japanese Scientists and Engineers (JUSE), Tokyo.
- The EFQM Excellence Model (2007), *European Foundation for Quality Management*, Brussels Representative Office, EFQM, Brussels.

About the authors

Kozo Koura is the President of Kozo Koura & Associates, Japan. Kozo Koura is the corresponding author and can be contacted at: NP4K-KUR@asahi-net.or.jp

Balvir Talwar is Senior Deputy General Manager (Business Excellence) at Bharat Heavy Electrical Limited, Haridwar, India.