

## LIST OF REFERENCES

- Alexandros, G.P.(2007), "Understanding Total Quality Management in Context: Qualitative Research on Managers' Awareness of TQM Aspects in the Greek Service Industry", Vol. 12, pp. 40-66.
- Abdullah, M.M. and Tari, J.J.( 2010), "The effect of soft factors and quality improvement on performance of Malaysia's electrical and electronics industry", International Journal of Management Science
- Abdullah, M.M.B. and Uli, J.(2009),"The importance of soft factors for quality improvement and organisational performance", Int. J. Productivity and Quality Management, Vol. 4, No. 3
- Al-Jalahma, R. and Gallear, D. (2010), "exploring the relationships between core elements of tqm implementation", European, Mediterranean & Middle Eastern Conference on Information Systems 2010
- Al-Swidi, A. K. and Mahmood, R. (2011), "Enhancing A Bank's Competitive Advantage through theIntegration of TQM Practices, Entrepreneurial Orientation (EO), and Organizational Culture", European Journal of Social Sciences – Vol. 20, NO. 2
- Arumugam, V. and Chang, H.W., "Self-assessment of TQM practices: a case analysis", Faculty of Management, Multimedia University, Cyberjaya, Malaysia
- Arumugam, V. and Mojtahedzadeh, R. (2011), "Critical Success Factors of Total Quality Management and their impact on Performance of Iranian Automotive Industry", International Conference on Innovation, Management and Service, IPEDR vol.14
- Arumugam, V. C. and Mojtahedzadeh, R., (2011) , "Critical Success Factors of Total Quality Management and their Impact on Performance of Iranian Automotive Industry: A Theoretical Approach", EuroJournals, Inc.
- Boon, O.K. and Safa, S.M. (2006), "TQM Practices and Affective Commitment: A Caseof Malaysian Semiconductor Packaging Organizations", International Journal of Management and Entrepreneurship
- Buentello, J.R. and Jung, J. (2010), "exploring the casual relationships between organizational citizenship behavior, total quality management, and performance", University of Texas-Pan American
- Collinson, M. and Rees, C.(1998), "involving employees in total quality management: employeeattitudes and organisationalcontext in unionised environments", Industrial Relations Research Unit, University of Warwick

Dilber, M., Bayyurt, N., Zaim, S. and Tarim, M. (2005/2004), "Critical Factors of Total Quality Management and Its Effect on Performance in Health Care Industry: A Turkish Experience", *Problems and Perspectives in Management*

Fast Market Research,(2010), Recently released market study: Sri Lanka Information Technology Report, May 02, 2010

Gayathri, R., "Sthdy of knowledge sharing determinants in the sri lankan software industry", Postgraduate Institute of Management, Sri Lanka

IBM Annal Report (2010)

Jung, J.Y. and Wang, Y.J.(2006), "Relationship between total quality management (TQM) and continuous improvement of international project management (CIIPM)", The University of Texas-Pan American

Madanmohan, R. (2001), "Sri Lanka searches for niche in Internet Age".

Mojtahedzadeh, R. and Arumugam, V.(2011), "the relationship between soft factors of total qualitymanagement, qualityimprovement, and performance inthe iranian electronic industry:a theoretical approach", Centre for Quality, Faculty of Mechanical Engineering, University of Kragujevac

Nofal, A.A. and Zairi, M.(2010), "Critical Factors of TQM: An international Comparative Benchmarking Analysis", European centre for best practice management

Oakland, J. and Porter, L. (2010), "Quality in the 21st Century – the Foundations".

Rahman, S.(2002), "Leadership and HR Focus in TQM Research in Australia: An Assessment and Agenda", Working paper

Shahin, A. and Dabestani, R. (2011), "A feasibility study of the implementation of total quality management based on soft factor", *Journal of industrial engineering and management*

Singgih, L.M., (2011), "Impact of Quality Management Practices on Firm Performance": The Research Evolution, *Industrial Engineering Department*

Singh, T., Geetika and Dubey, R. (2011), "A Theoretical Framework for Soft dimensions of Total Quality Management", *International Conference on Economics and Finance Research*, vol.4

Talib, F. and Rahmanm, Z. (2010), "The relationship between total quality management and quality performance in the service industry: a theoretical

model", International Journal of Business, Management and Social Sciences, Vol. 1, No. 1

United Nations Conference on Trade and Development(2008), "Information Economy Report", 06th February 2008

Valmohammadi, C. (2011), "an empirical research on the relation between it and tqm practices", international journal of academic research, Vol. 3 No. 1, pp. 874-880

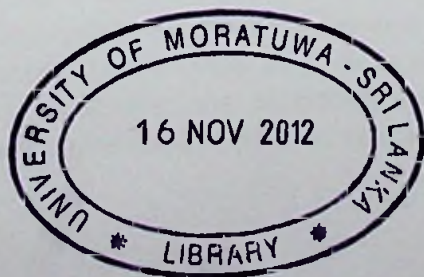
YUSUF, Y. and GUNASEKARA, A. (2007), "Implementation of TQM in China and Organisation Performance: An Empirical Investigation", Lancashire Business School, University of Central Lancashire, Preston, UK, Vol. 18, No. 5, 509-53

Zaim, S., Turkyilmaz, A. and Korkusuz, P.T. (2004), "Neural Network based model for measuring the effects of total quality management practices on business performance of SMEs", Department of Management, Fatih University, Istanbul, Turkey

Zaim, S. and Turkyilmaz, A.(2010), "Neural Network based model for measuring the effects of total quality management practices on business performance of SMEs", Department of Management, Fatih University, Istanbul, Turkey

ZHU, H.Y. (2006), "Test the implementation of TQM in China", University of Nottingham

# APPENDIXES



## **ANNEXURE 1: MAHINA CHINTANA (IT/BPO SECTOR)**

### **Sri Lanka Strategic Plan of Development for IT/BPO Industry**

Sri Lanka is an emerging global IT/BPO (Information Technology/Business Process Outsourcing) destination in a number of key areas such as telecommunication, banking, financial services, insurance, and software testing. The BPO sector has developed a reputation in the fields of customer support, software development, and accounting services. Cheap labour, low operating costs, and the geographical situation in the advantageous time zone are the main attractions of Sri Lanka for the BPO business.

The software industry has been identified as a key industry with a high potential. There are about 100 software development companies and the total workforce exceeded 44,000 by 2008. Multinational companies around the world have utilised locally developed software in their business processes due to superior quality. The industry is considered as the fifth largest foreign exchange earner at present with US\$275 million earnings, and it is expected to exceed US\$1 billion by 2016.

Lack of a talented work force is the main impediment faced by the industry. The country needs to employ at least 500,000 people to develop the industry in the medium term. Recognising the potential of this sector, steps will be taken to fast track the development through providing fiscal and other incentives and concessions. A new tax regime will be developed to generate a high growth and investment in the IT/BPO sector.

### **Investment Strategy for IT/ITES Sector**

With the educated pool of talent available in the country and the expansion of IT education in all parts of the country, the IT/BPO sector which currently exports services to the value of US\$300 million is targeted to increase to a billion dollar industry in five years time. This sector will absorb a talent pool in excess of 25,000. High profile international BPO operators will be attracted in addition to the few that are already present in the country. IT training is recognised for skills developments and in education to support this thrust sector.

### **Malabe IT City**

The Malabe Campus of the Sri Lanka Institute of Information technology (SLIIT) which was established in 1999 is a 25 acre campus built to educate and train IT professionals required by the fast growing IT industry in Sri Lanka. The university was set up with a vision "to be a Centre of Excellence to advance and disseminate knowledge, foster and promote innovation, and produce world-class intellectuals in the field of Information and Communication technologies to best serve the nation and beyond." The Mission is "To ensure that Sri Lanka profit from Information Technology, by providing education and training, conducting and promoting research and development, provide consultancy and software services, nurturing IT ventures, thus ensuring the availability of a rich pool of experts in IT."

SLIIT Malabe Campus has a set of aesthetically designed, modern buildings comprising a ten storeyed building, a six storied building, and a large auditorium. This building complex has a built-up area of over 135,000 square feet and comprises lecture-theatres, laboratories, auditorium, communication facilities, library and reading rooms, administration and service facilities, cafeteria, and other infrastructure requirements such as lifts and stand-by generators. It has a large playing field, tennis courts, and a jogging track. The expansion plans include a new four-storied building that will accommodate more class rooms and common rooms. The programmes available at campus include Degree courses with specialisation in Information technology, Computer Systems & Networking, and information Systems. Also, recently the university has tied up with various international universities in order to give students enhanced learning experiences. Few such programmes include: B.Sc. in Information Technology of Curtin University, Australia; B Eng in Electronic Engineering, Sheffield Hallam University, UK; and BBA in Business Management, Sheffield Hallam University, UK. The in-house facilities available at various centres like-- Software design and development Division; Research and development incubator; and SLIIT Research Centre.

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## Knowledge Economy

Sri Lanka aims to move towards a quality and student friendly education system which contributes to a knowledge economy and provides the required skills and virtues to face the emerging needs of a modern global knowledge economy. In order to improve the overall quality of basic and secondary education it is felt to diversify the curriculum and improve the achievement levels of the students in secondary schools in English, Science, Mathematics, ICT, and Management.

It is collectively viewed to integrate technology learning as a part of basic education. Schools will be encouraged to use foremost technology in class rooms to enhance the delivery of education. The computer will be an essential device for every class room in secondary schools (from grade 6 to 13). In addition, multimedia and computer aided learning materials, approved by the relevant authority, will extensively be used in class room education. Technology learning will gradually be introduced into every student's basic educational curriculum to provide them with required skills and virtues to face the emerging needs in the future economic milieu. Government, in partnership with private sector will develop necessary communication technology and multimedia resources to help students learning in the classroom and alternate programme delivery such as distance learning.

Policy objective	Strategy	Target / outcome 2020
<b>Improve the quality of Basic and Secondary education</b>	<p>Review and diversify existing curriculum</p> <p>Further strengthen teaching and learning of English as a second language at school level</p> <p>Develop Science and Mathematics teaching methodologies</p> <p>Develop laboratory facilities of 1,000 schools and provide science mobile laboratories for 3140 schools</p> <p>Establish a "Model ICT learning environment" within the special programme of improving 1,000 schools through provision and replacement of ICT equipment</p> <p>Implement educational software development programme</p> <p>Implement special programmes to improve soft skills - team work, communication, leadership and entrepreneurial ability of students</p>	<p>Improved GCE O/L pass rate from 52 percent to 65 percent by 2020</p> <p>Improved GCE A/L pass rate from 60 percent to 75 percent by 2020</p> <p>Improved Minimum laboratory facilities for all schools will be ensured</p> <p>All schools comfortably adopt ICT for academic and administrative purposes</p> <p>Extended ICT as a technical subject for GCE O/L</p> <p>Established proper science and mathematics education in all secondary schools</p> <p>Improved soft skills of students</p>
<b>Improve University Education for knowledge</b>	<p>Establish a new modern Science and Technology/ ICT university as a partnership project. Period: 2012-14</p>	<p>Increased world class education opportunities within the broad sphere of telecommunications, multimedia, computers, digital art, animation, information technology, software development and science and technology</p>

## Science, Technology and Innovation Strategy for Sri Lanka

"I will restructure the education and knowledge systems suitably, so that Sri Lanka becomes a key hub for knowledge and learning in the world": Mahinda Chintana - Vision for the Future

The scene is now set for an accelerated drive for economic development of our country. For Sri Lanka to improve its economy, it is imperative to appreciate the fierce competition that goods and services have to face in the global market. This demands the infusion of technology and innovation to make products and services capable of overcoming the competition from goods and services from abroad in the open market. The scientific capability within the country has to be of world standard in the areas that Sri Lanka has the competitive edge, for the goods produced and services provided by the economy to be able to outsell those from other countries.

Whilst the Science and Technology (S&T) policy adopted by the Government in June 2009 identifies the generic S&T capability necessary for Sri Lanka it is necessary to specifically focus on the priority needs for rapid economic development in the next five years so as to help double the per capita GDP by the year 2016. The vision of this strategy is to make Sri Lanka a leader in knowledge creation and innovation in Asia by establishing a world class national research and

innovation ecosystem which will generate the necessary strategies, sustainable innovations, and technologies to achieve economic progress by focusing on areas of co-competencies and resource linked opportunities, whilst upholding sustainable principles and preparing its people for a knowledge based society through improved scientific literacy in Science.

### **Strategic Direction—Science, Technology and Innovation Strategy**

**Goal –1:** An efficient system to actively harness innovations and technologies to generate and improve products and services to contribute towards doubling the per capita GDP in an equitable manner by increasing the high tech value added exports and the production for the domestic market

- Increase the high tech value added exports from 1.5 percent to 10 percent of the GDP by year 2015 through the advanced technology initiative.
- Achieve a market increase of import replacement by strategic production and social activities in a competitive milieu through enhanced and focused research and development.
- Develop a dynamic technology transfer platform for wealth creation through the technoentrepreneurship initiatives.

**Goal –2:** Well established, dynamic and resourced world class National Research and Innovation Eco— system.

- Establish a system for efficient and coordinated S&T governance.
- Attract, build, and retain strategic human capital needed to make Sri Lanka a leading knowledge and innovation hub in Asia.
- Create a comprehensive, world class research and innovation system through a well planned S&T infrastructure and services modernisation initiatives.
- Ensure rationalised and increased investment in R&D supported by facilitated utilisation.
- Facilitate international partnership in promoting high technology and research.

**Goal –3:** An effective framework to prepare the people of Sri Lanka for a knowledge society

- Implementation of the ‘Science for All’ initiative.
- Attract students at all levels to science.
- Create awareness of the potential of technology, R&D, and innovation in industry and businesses.

**Goal –4:** Sustainability principles entrenched in all spheres of scientific activities

- Ensure strategic competitive advantage and differentiation to achieve economic sustain ability in all scientific activities.
- Ensure environmental sustainability in all areas of work.
- Ensure social sustainability in all activities.



The objective of next massive leap forward is to transform Sri Lanka into a strategically important economic centre of the world. The aim is to transform Sri Lanka to be the Pearl of the Asian Silk Route once again, in modern terms. Using its strategic geographical location effectively, the country will develop all the spheres as a Naval, Aviation, Commercial, Energy, and Knowledge hub, serving as a key link between the East and West

### Major Issues, Long-term Policies and Strategies

Issue	Policy	Strategy
Lack of adequate human capital for research, development and innovation in high-tech areas	Development of human resources in high-tech areas	<ul style="list-style-type: none"> <li>• Meet the demand of research and innovation in private and state sectors</li> <li>• Attract more young graduates to research careers</li> <li>• Recognise difference between researchers and university academics. (Nearly 5-10 percent of university academics are engaged in research)</li> <li>• Attract senior researchers and innovators through appropriate incentive schemes to reverse brain drain</li> </ul>
Decreasing trend of science students in public schools	Attract students at all levels to science education	<ul style="list-style-type: none"> <li>• Upgrade the Planetarium, ICT platform for rapid dissemination of knowledge by granting free internet access</li> <li>• Set up a Science Museum or an Exploratorium</li> <li>• Science Centres to inculcate scientific awareness</li> </ul>
Lack of entrepreneur supportive research institution network	Create entrepreneur friendly research institutes	<ul style="list-style-type: none"> <li>• Ensure the protection of patent rights of the entrepreneur</li> <li>• Create a financial and technical supportive environment for new entrepreneurs</li> </ul>
Inadequate level of high end technology exports in Sri Lanka (Present level is 1.5 percent)	Increase advanced technology initiatives; Electronics, IT, Telecom, Biotechnology and Nano-Technology	<ul style="list-style-type: none"> <li>• Establish e-life centres and IT centres in 10 Divisional Secretariats to link Sri Lankan youth to the world</li> <li>• Establish a Centre for Technology and Chartered Institute for ICT</li> <li>• Establish a National Space Research Centre</li> <li>• Give the high priority to invite FDI with high-tech and exchange of personnel in hi-tech areas</li> <li>• Technical collaboration with foreign hi-tech industries in transferring advanced technology</li> </ul>

TABLE 3: SOFT DIMENSIONS FOR SUCCESSFUL IMPLEMENTATION OF TQM

Constructs	Source	Definition(s)
Leadership	Juran and Gryna [38]	Management role to establish quality policies, goals, and to provide resources, problem oriented training and stimulate improvement.
	Anderson et al.[3]	The ability of top management to establish practice and lead a long term vision for the firm, driven by changing customer requirements as opposed to an internal management control role.
	European Quality Award [53] & MBQA [53]	Leadership is crucial in creating the goals, values and systems that guide the pursuit of continuous performance improvement.
Customer Satisfaction	Minjoon et al. [61]	They are expected to set quality as a priority while allocating adequate resources to continuous quality improvement and evaluating employees based on their performance.
	Deming [21] Flynn et al.	Customer is the most important part of the production line; product should be aimed at the needs of the customer
	Feigenbaum [25] Philips Quality [70]	To improve customer focus efforts, customer complaints should therefore be treated with top priority.
	Juran and Gryna [38]	Rely on customer complaint information to identify the "vital few" complaints that demand indepth study in order to discover the basic causes and to remedy those causes.
People Results	EFQM [34]	Customer Satisfaction measures are used to understand the factors that drive market.
	Tenner & DeToro [8]	Educating and training all employees into the mission, vision, direction, and strategy of the organization as well as the skills , to secure quality improvement and resolve problems.
	Bergman & Klefsjo [6]; Tenner & DeToro [6] Irianto [12]	People Result is a process designed to empower members of an organization to make decisions and to solve problems related to their level in the organization. To realize the potential of working capability, and to engender communication, participation, trust, teamwork, empowerment, personal development and pride.
Partnership & Resources	Hong & Satit[32]	The organization plans and manages its external partnerships and internal resources in order to support its policy and strategy and the effective operation of its processes.
	EFQM [34]	External partnerships and finances are managed , performance requirements are carefully defined and used to select suppliers and partnerships.
Human Resource Focus	Mahour, [53]	Quality results are effective by human resources focus and processes management
	Parasat [70]	Total quality management practices relates to product design and development and human resources management focus
	Jones [39]	Investment in training and development; a new values and norms; new definition of reward and promotion system; improving organizational learning and decision-making
	Karia & Asaari [43]	Companies need to invest in the development of the workforce through education, training, and opportunities for continued growth.
	EFQM[34]	Work and Jobs are carefully designed, organized, and managed to provide opportunities for individual initiative and self -directed responsibility
Empowerment	Brymer [63], Ugboro and Obeng [63], Denham Lincoln et al. [63]. Bowen and Lawler (1992)	A process of decentralizing decision making in an organization, whereby managers give more discretion and autonomy to the front lines employee. Sharing with front-line employees information about rewards based on organization performance and enable them to contribute to the organizational performance.
	Cherrington [13]	Acquisition of specific skills or knowledge, to perform particular activities or a specific job.
Training	Brown [63]	Training is the second most commonly used TQM implementation practice in USA.
	Kappelman and Prybutok [63]	Training provides an opportunity to empower and motivate employees, reduces employee resistance and increases chances of TQM success.
	Karia & Asaari [43]	Training and education have a significant positive effect on job involvement, job satisfaction, and organizational commitment
Communication	Karia & Asaari [43] Thiagarajan & Zairi [88] Wilkinson, Godfrey and Marchington [90]; Oschman[67]	The need for effective communication is for the development of awareness and building commitment to quality in an organizations environment.
	Thiagarajan & Zairi [88]	Open two-way communication also helps to foster good employee and employer relationship.
Culture	Oschman[66]; Wilkinson, Godfrey and Marchington [91]	Feeling of togetherness, empowered employees, no compromise with success.
	Woods [92]	Shared beliefs, values, attitudes, institutions, and behavior patterns that characterize the members of a community or organization. In a healthy business culture, what's good for the company and for customers comes together and becomes the driving force behind what everyone does.

## Research Questionnaire

### Dear Respondent

Dear respondents, please be informed that this study is purely for academic work. I therefore solicit for your support and cooperation providing the necessary information. Being aware of organizational performance data sought in terms security, I promise to treat the information provided as confidential.

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### Introductory Details

Company Name .....  
Position / Designation .....  
Gender                       Male                       Female

.....

01) **How long** have you been working in the current organisation?

- a) 0-1 year
- b) 2-4 years
- c) 5-10 years
- d) More than 10 years

02) What is your view, regarding the **importance of concept of quality** when doing organization's operations?

- a) Critical
- b) Very Important
- c) Fairly Important
- d) Not Important

03) What is your **level of familiarity** with TQM principles applied by your organization?

- a) Poor
- b) Little
- c) Good
- d) Very Good

04) Do you have a **company - wide culture** committed to quality improvement?

- a) Not at all
- b) Partially
- c) Continuous improvement is not embedded to the culture , it works independently as an obligation concept
- d) Yes , do have a quality improvement culture

05) Does your organization take the **participation of all employees in quality activities**?

- a) Not at all
- b) Rarely
- c) Mostly
- d) Always

06) Are your **senior managers involved** in TQM projects?

- a) Not at all
- b) In primary issues
- c) In major issues
- d) In all issues

07) Describe the **amount of training on quality management per year** you receive from the organization:

- a) None
- b) Less than a week
- c) One /Two Weeks
- d) Over Two Weeks

08) Your view on the **adequacy of the training** given on quality related matters:

- a) More than adequate
- b) Adequate
- c) Barely adequate
- d) Inadequate

09) "**Training I gained enhanced my ability on improving customer solutions**" your opinion on this statement:

- a) Very True
- b) Somewhat True
- c) Not True
- d) I Don't Know

10) In your opinion, how **supportive are the existing organizational policies** for Implementing total quality management?

- a) Very Poor
- b) Poor
- c) Good
- d) Very Good

11) Does your organization have a **quality policy**?

- a) Yes
- b) No
- c) I Don't Know

12) If "Yes" is it **accessible/well informed** to you?

- a) Fully accessible & well informed
- b) Only operational aspects are informed (team briefing )
- c) Not accessible /informed

13) Your view on **top management's participation to quality meetings** :

- a) Highly Satisfactory
- b) Satisfactory
- c) Unsatisfactory
- d) Highly Unsatisfactory

14) Top Management considers your **suggestions for quality planning and improvement**:

- a) Always
- b) Mostly
- c) Very Often
- d) Rarely
- e) Not at all

15) Your experience on **dealing with top managers** on quality issues?

- a) Highly Satisfied
- b) Satisfied
- c) Moderate
- d) Dissatisfied
- e) Highly Dissatisfied

16) Your **influence over quality** implementation:

- a) Great deal
- b) Some
- c) Little
- d) None

17) Your ability and freedom of **making decisions** when implementing quality:

- a) No chance
- b) Very Low
- c) High
- d) Very High

18) Your idea on **reasons for team work** :

- a) Required by management
- b) Employee Choice
- c) Both
- d) No Idea

19) Your **level of awareness** on other team members areas of expertise :

- a) Very Poor
- b) Poor
- c) Good
- d) Very Good

20) Your overall conclusion on the **current practice of soft TQM**:

- a) Practicing up to a highly satisfactory level
- b) Practicing up to a satisfactory level
- c) Not Practicing up to a satisfactory level
- d) Very Poorly practising
- e) I don't Know



21) Please give your answers to the following question with respect to the organization performance based on the application of soft TQM dimensions

Measurement Criteria	SA	A	U	D	SD
External Customer Satisfaction has increased					
Overall Product Quality has Increased					
Employee Productivity has Increased					

- SA Strongly Agree
- A Agree
- U Uncertain
- D Disagree
- SD Strongly Disagree

----- THANK YOU FOR YOUR COOPERATION -----



## Interview Guide

Company Name:

Name :

Position:

1. What is your perspective on applying TQM to the organization?
2. Does your organization have a quality culture? If yes how's it? If not do you have plans to implement a quality culture?
3. Do you allow all employees to participate for quality processes? Or is it an assigned team of professionals who work on to improve quality?
4. What is your level of engagement with TQM?
5. Explain your idea on the existing training procedures?
6. Do you have a proper system to monitor the employee's level of application of gained knowledge to improve customer solutions? If an employee is practising do you have an appraisal system linked to it?
7. Does your organizational general policies linked with TQM?
8. How often do you participate for quality planning and implementation meetings?
9. Do you believe soft TQM factors contributed to the improvement of below performance categories?
  - External Customer Satisfaction has increased
  - Overall Product Quality has Increased
  - Employee Productivity has Increased
10. What are your suggestions to improve the contribution of soft TQM to enhance organizational performance?