IMPACT OF TOTAL QUALITY MANAGEMENT PRACTICES ON INNOVATION IN SERVICE ORGANIZATIONS

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A thesis submitted in fulfillment of the requirement for the award of the Doctor of Philosophy

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During the last two decades, service industries have contributed significantly to the increase of Gross Domestic Products nationally and globally in developed and developing economies. Innovation has significant role in adding the competitive advantage in the scenario. Innovation in service organizations has become an important subject in both theoretical and practical research agenda. The important of service innovation is delineated from the importance of service in manufacturing organizations. It has been proven that implementing Total Quality Management (TQM) system enhances innovation and its process through its practices. Many studies have investigated the relationship between TQM and innovation and mostly not in service organizations context. This study investigates the impact of TQM on innovation in service organizations. Most of those studies did not focus on the relationship between TQM and innovation in services organizations. In addition, most of those studies did not recommend specific TQM practices that may influence innovation more than the other practices. This study aimed to examine the impact of TQM practices on innovation and identify which practices may have more influence on innovation then to come out with a model to be recommended in this relationship. Data were collected using survey method from service organizations which operate in Malaysia under different service subsectors. Confirmatory Factor Analysis technique was used to validate the constructs included in the research model. The measurement model was validated using Goodness of Fit indices, Standardized regression Weight, Convergent validity, Content validity, Discriminant validity and Multicoleanarity assessment. Structural Equation Modeling using Analysis of Moment Structures software AMOS was used to test the hypotheses. Hypotheses testing revealed that practices of customer focus and people management are the highest TQM practices that positively impact innovation in the surveyed
organizations. It also appeared that Radical Process Innovation and Radical Service Innovation are the most innovation types that positively influenced by TQM practices. This study has contributed with novel results characterized by unique TQM practices in service organizations. This study has come out with a model on the impact of TQM practices on innovation in service. The study has added the perspective of service organizations to the debate on the relationship between TQM and innovation. Results of this study are applicable in both private and public service organizations. Managers and practitioners in service organizations can use this study to employ TQM for innovation.
ABSTRAK

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<td>AMOS</td>
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ISI - Incremental Service Innovation
ISO - International Standard Organization
OECD - Organization for Economic Co-operation and Development
ML - Management Leadership
MIDA - Malaysian Investment Development Authority
MITI - Ministry of International Trade and industry
MSIC - Malaysia Standard Industrial Classification
NFI - Normed Fit Index
NNFI - None Normed Fit Index
PM - People Management
QMEA - Quality Management Excellence Award
RPI - Radical Process Innovation
RSI - Radical Service Innovation
RSI - Radical Service Innovation
SEM - Structural Equation Modeling
SMEs - Small and Medium Sized Enterprises
SPSS - Statistical Package for Social Science
SRMR - Standardized Root Mean Square Residual
TQM - Total Quality Management
TLI - Tucker-Lewis Index
TR - Training
WEF - Geneva-based World Economic Forum
WTO - World Trade Organization
HR-TQM - Human Resource Based TQM Practices
RMSEA - Root Mean Square Error of Approximation
MBNQA - Malcolm Baldrige National Quality Award
1.1 Background

Importance of service industry is significantly increasing in national and global economics. During the last two decades, contribution of service sector to the Gross Domestic Product (GDP) has been significantly increasing in both developed and developing economics. According to Directorate for Science, Technology and Industry (STI) of Organization for Economic Co-operation and Development (OECD), in 2008 service sector shared in some countries more than 70% of the GDP for example Luxembourg 82%, Greece 78%, and USA 77% (OECD, 2008). Figure 1.1 shows shares of service sector in GDP of some countries.
Service sector in Malaysia, the country of interest in this study, plays a significant role in its economic. According to Malaysian Investment Development Authority (MIDA), in 2009 the Malaysian services industry share was 55% of the GDP, refer to figure 1.2. It has the largest share of GDP and higher actual, estimated and predicted growth rate comparing with other sectors such as manufacturing and agriculture (Statistics, 2013; Treasury-Malaysia, 2013). In 2011, the sector contribution increased to be 58.6% of the GDP and recorded growth rate of 6.8 percent. It provides an employment to 6.5 million persons which is 53.3% of the total employment in 2011(Malaysian investment performance report, 2011).
Service organizations are part from the high growing Malaysian economic. Malaysian economic indication shows high levels of performance. In 2011, Malaysia economic was ranked 19th out of 153 for the fastest economic in the world. In 2012, Malaysian economic was ranked 24th out of 144 countries in the Global Competitiveness Ranking report published by Geneva-based World Economic Forum (WEF). WEF’s report also placed Malaysia the 24th out of 133 in global trade-enabled economies. In the same report and within Asia-Pacific region, Malaysia placed was at the 6th position, ahead of Taiwan and South Korea at 7th and 8th positions respectively. Malaysia was also ranked the 4th amongst 13 best investment destinations in Asia (Asia Business Outlook Survey by the Economist Corporate Network 2013; Bank Negara Malaysia BNM, 2012).

These economic activities involve various service business organizations. For example: health care, transportation, education, government service, hotels and restaurants, telecommunication, financial services, social and personal services, retail and wholesale organizations. To compete in the market and to increase their competitive advantage, service business organizations need to provide high quality and innovative services. Implementing Total Quality Management (TQM) system has positive impact
on innovation process in organizations due to TQM elements such as continual improvement and customer focus (Baldwin & Johnson, 1996; Flynn et al., 1994; Kim, et al., 2012; Martínez-Costa & Martínez-Lorente, 2008; Prajogo & Sohal, 2001).

Within the context of the high economic activities in the market, the intensified competition has determined the importance of innovation in service organizations as a source of competitive advantage growth (OECD). OECD stated “the importance of service innovation is well-established but many firms are seeking new ways to develop the type of service innovation necessary for success in global value chains.”

Innovation in service has become important subject in both developed and developing economics. (Bitner & Brown, 2008; Chae, 2012; Ettlie & Rosenthal, 2011; OECD, 2008). Topics of service innovation are becoming basic issues in both practical and theoretical research agenda (Chae, 2012; Oke, 2007). In addition to the intensive market competition, importance of innovation in services emerged from the growing importance of service in manufacturing industry. Terms like “servitisation” (Santamaría et al., 2012; Vandermerwe & Rada, 1988) and service-product (Miles, 2008) are used to empathize the significance of service in manufacturing industry.

TQM has the same impact in local and global economics. Both TQM and innovation seek to incorporate organization objectives and functions to provide services satisfy customers. They involve all employees to be apart from the management process of quality and innovation. Furthermore, both provide a continual improvement in process and services (Oke, 2007; Singh & Smith, 2004; Faisal et al., 2012). Continuous improvement, achieving customer satisfaction and open service culture are main goals of both TQM and innovation. Thus, the link between TQM and innovation is important indicator for organization performance.
1.2 Problem Statement

As explained in the previous section regarding the role of TQM and innovation in business organizations, in the context of competitive economics and business excellence, TQM and Innovation became core elements in increasing the competitive advantage (Abrunhosa & Moura E Sá, 2008; Hurmelinna-Laukkanen et al., 2008; Mushtaq et al., 2011). TQM and innovation have vital role in service business success, the importance of the relationship between TQM practices and innovation emerges from the importance of TQM and innovation in creating and strengthening the competitive advantage. TQM and innovation affect customer satisfaction that top-targeted goal of service organizations’ business (Mushtaq, et al., 2011; Pekovic & Galia, 2009).

The importance of TQM and innovation in business organization competitive advantage derived academicians and researchers to investigate the link between them, specifically, the impact of TQM on innovation. The existing literature has provided different views and various approaches from different prospective on the linkage between TQM and innovation.

However, gap remains. The gap in general description is about the relationship between TQM practices and innovation in service organizations regarding the nature of TQM practices in service organizations compared to organizations from other sectors such as manufacturing organizations. This gap can be described in details in four shortcomings as follow:

First, most of empirical studies on the impact of TQM on innovation conducted completely or partially in manufacturing industry (Jitpaiboon & Rao, 2007; Teh, Yong, Arumugam, & Ooi, 2009). There is a need for more studies on this field in services industries (Ang et al., 2011; Juneja et al., 2011; Sit et al., 2011), examples of those studies focused on manufacturing shown in table 1.1.
Table 1.1: Studies on the impact of TQM on innovation in manufacturing organizations

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<tbody>
<tr>
<td>Hoang et al. (2006)</td>
<td>204 manufacturing and service firms in Vietnam</td>
</tr>
<tr>
<td>Martínez -Costa and Martínez-Lorente (2008)</td>
<td>451 manufacturing and nonmanufacturing firms in Spain</td>
</tr>
<tr>
<td>Abrunhosa and Moura E Sá (2008)</td>
<td>20 footwear manufacturing firms in Portugal</td>
</tr>
<tr>
<td>Santos -Vijande and Álvarez-González (2007)</td>
<td>93 ISO 9000 certified firms (manufacturing and service) in Spain</td>
</tr>
<tr>
<td>Sadikoglu and Zehir (2010)</td>
<td>373 firms from different industries in Turkey</td>
</tr>
<tr>
<td>Perdomo-Ortiz et al. (2009)</td>
<td>102 machinery and instruments firms in Spain; 106 Spanish industrial firms in Spain</td>
</tr>
<tr>
<td>Ooi et al. (2012)</td>
<td>206 manufacturing companies in Malaysia</td>
</tr>
</tbody>
</table>

Second, with respect to the importance of TQM and innovation in business organizations and based on the literature review, the relationship between TQM and innovation in service organizations in Malaysia may need more investigation. Third, results of previous studies concluded different and contradicted results (Kim, et al., 2012). Some have found TQM has positive impact on innovation (Abrunhosa & Moura E Sá, 2008; López-Mielgo et al., 2009; Martínez-Costa & Martínez-Lorente, 2008; Prajogo & Hong, 2008; Sarkees & Hulland, 2009). Whereas others found TQM has no impact on innovation (Moura E Sá & Abrunhosa, 2007; Pekovic & Galia, 2009; Santos-Vijande & Álvarez-González, 2007; Singh & Smith, 2004). Therefore, the debate remains because there is no approving regarding that TQM have positive or negative impact on innovation.

Fourth, Results and conclusions are not specific about which TQM practice that lead to achieve both quality and innovation together in service organizations. Each study used different TQM practices frameworks to examine their impact on innovation. Most of those frameworks were basically developed for manufacturing operation. For instance, study of Abrunhosa and Moura E Sá (2008) involved investigating the impact of TQM practices of autonomy, consultation, supporting people management and communication on technological innovation. Other example is the study of Ooi et al., (2012) used leadership human resource focus, strategic planning, information & analysis, customer focus and process management to examine its impact on innovation performance.

Fifth, the previous empirical studies on the relationship between TQM practices and innovation addressed a specific type of innovation focusing on manufacturing
industries. For instance, study of Abrunhosa and Sa (2008) dealt with technological innovation and study of Prajogo and Sohal (2004) dealt with product innovation. Studies targeted the linkage between TQM practices with all types of innovation in services industries are scarce.

1.3 Research Questions

From the context of the problem statement in the previous section, research questions emerged as follow:

i. What are the relationship between TQM practices and innovation in service organizations?

ii. Are TQM practices having positive influence innovation more than the other practices in services organizations?

iii. Are there any differences between innovation types regarding their relationship with TQM in service organizations?

iv. Is there any model can be presented and recommended on the impact of TQM practices on innovation in service organizations?

1.4 Objectives of the study

To address research questions, objectives of this study were:

i. To examine the impact of different TQM practices on different types of innovation in services organizations.

ii. To identify which TQM practices have more impact on innovation in service organizations.

iii. To identify which types of innovation influenced more by which TQM practices in service organizations.
iv. To develop a model on the relationship between TQM and innovation in service organizations.

1.5 Scope of the study

This study has addressed the impact of TQM practices on innovation in service organizations in Malaysia. The scope involved service organizations that are ISO 9001:2000 certified, Quality Management Excellence Award (QMEA) winners, any other local or international business quality management and business excellence winner, and/or applied TQM and operate in Malaysia.

The study has empirically examined the impact of TQM practices that relate to the nature of service organization operation on five holistic types of innovation. Those TQM practices are Management Leadership, People Management, Customer Focus, Information Analysis and Continuous improvement. Types of innovation are: Radical Process Innovation, Incremental Process Innovation, Radical Service Innovation, Incremental Service Innovation and Administrative Innovation.

1.6 Significance of the study

The significance of this study emerged from the significant role of service sector in economics, refer to section 1.1 for the details of the significance of service sector in the global and local economics and also the role of Malaysian Service sector.

Significance of this study is also delineated from the perspective of service organizations regarding the relationship between TQM and innovation in service organizations. The literature has not presented or showed many studies on this relationship in the scope of service industry.
The significance of this study is also drawn from its contribution to the body of knowledge though presenting a new theory in the relationship between TQM and innovation. The theory is characterized by the perspectives of service organizations compared to the existing theories which developed on this relationship mostly in manufacturing organizations context. From methodological perspectives, the study added to the body of knowledge a holistic service sector context and service-related TQM practices study. This study involved service organizations from different sub sectors included in the main service sector.

For practitioners and managers of service organizations this study has presented insightful views on the linkage between TQM practices and innovation. For example, focusing on customers and people management are the most useful managerial practices that influence innovation under TQM implementation. This presents the results of this study to be useful in the level of public organizations too.

By understanding the relationship between TQM and innovation, organizations in service industry can identify the innovation factors that driven by TQM. By identifying the innovation factors that driven by TQM, service organizations can apply TQM to be leading to innovation.

1.7 Structure of the thesis

This thesis comprises six chapters as follow:

**Chapter 1** introduces the study. It gives an overview on the importance of service industries organizations in an economic, significance of TQM and innovation in competitive advantage of service organizations, significance of the relationship between TQM and innovation, problem statement, objectives of the study and research methodology.

**Chapter 2** provides a comprehensive review on the literature related to the subjects of the study including TQM practices, innovation and the relationship between the two subjects, and innovation measurements.
Chapter 3 develops and discusses the theoretical framework grounded the study. Then the chapter applies this theoretical framework to the relationships between variables involved in the proposed model to formulate the conceptual model of the study.

Chapter 4 details the methodology employed in this study. It covers design of the study, scale development, scale validation, population and sampling techniques, data collection, questionnaire structure, and data analysis techniques.

Chapter 5 presents details of the analysis and discusses the findings. It covers the preliminary analysis, descriptive statistics, characteristic of the respondents, Confirmatory Factor Analysis (CFA) procedures and SEM analysis procedures.

Chapter 6 summarizes the findings, explains implications, presents limitations, recommends potential research extensions for this study and draws conclusion of the study.
2.1 Introduction

Main topics reviewed and discussed in this chapter are: definition of service, definition of TQM, historical evolution of TQM, TQM implementation and benefits, TQM and its practices in service sector, definition of innovation, innovation theories, innovation typologies, innovation measurements, and the relationship between TQM and innovation.

2.2 Definition of service

Oxford dictionary defines the word Service as “the action of helping or doing work for someone.” Another definition is “service is deeds, process and performance” by (Zeithaml et al., 2006). This definition looks to service from perspective of organizational management systems. Another definition of service as economic activity is “Service is an economic activity that creates values and provides benefits for customers at specific time and places” (Talib et al., 2012). This definition looks to service from the broader theory of the economic. Therefore, this definition in considered is this study because it broader which suits the scope of this study regarding service sector share in the economics.
2.1.1 Categories of services

OECD categorized services industry into four main categories: goods services such as logistics services, information services such as call centers, knowledge-based services for example such as financial services, and people services such as health care service (OECD, 2005). Zeithaml (2006) sorted services into four groups: service industries, derived service, intangible products, and customer service. Service industries are the companies with service as main product such as hotels and transportation companies.

The intangible product is the unphysical products such as training services and consulting services. Derived services are the services from physical product such as computers provide data processing service. Customer service is the supporting services for the goods products such maintenance services and setting up machines (Talib et al., 2012).

2.1.2 Definition of service sector

Based on the definitions and classifications of services in the literature, there are two definitions for service sector: narrow definition and broader definition. Narrow service sector definition includes all economics activities other than manufacturing, mining, forestry, agriculture, fishing and hunting, quarrying and construction, public administration and defense and utilities. While the broader definition includes construction, public administration and defense, and utilities (Kanapathy, 2003). Because this study aimed to examine the impact of TQM practice in all service sectors, the broader service industry definition will be considered.
2.1.3 Service sector in Malaysia

Service sector in Malaysia plays a significant role in the economy. In 2009, Malaysian service sector share was 55% of GDP presenting the largest share of GDP and higher estimated and predicted growth rate compared to other sectors such as manufacturing and agriculture sectors (Statistics-Malaysia, 2012; Treasury-Malaysia, 2013), refer to table 2.1. In 2011, service sector contribution increased to be 58.6% of the GDP and the recorded growth rate of 6.8%. It provides employment to 6.5 million persons which is 53.3% of total employment in Malaysia in 2011 (Statistics-Malaysia, 2012).

Table 2.1: Actual, estimated, and predicted share of service sector in GDP comparing with other sectors

(Department of Statistics Malaysia, 2012)

<table>
<thead>
<tr>
<th>Year</th>
<th>Service sector</th>
<th>Manufacturing sector</th>
<th>Agriculture sector</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Share of GDP (%)</td>
<td>Contribution to GDP growth (%)</td>
<td></td>
</tr>
<tr>
<td>Service sector</td>
<td>57.7</td>
<td>58.4</td>
<td>58.9</td>
</tr>
<tr>
<td>Manufacturing sector</td>
<td>27.6</td>
<td>27.5</td>
<td>27.2</td>
</tr>
<tr>
<td>Agriculture sector</td>
<td>7.3</td>
<td>7.3</td>
<td>7.2</td>
</tr>
</tbody>
</table>

As the service sector targeted to be key of economic growth in the Malaysia’s Third Industrial Master Plan (IMP3) (Alejandro et al., 2010), in 2009, government of Malaysia liberalized most of its subsector in order to support service sector. Those sub sectors included:

a) Computer & Related Services, such as
   i. Consultancy services related to the installation of computer hardware
   ii. Software implementation services
   iii. Data processing services
   iv. Data base services
   v. Maintenance & repair services of computers
   vi. Other services – data preparation, training, data
   vii. recovery & development of creative content

b) Health & Social Services, such as
   i. All veterinary services
ii. Welfare services delivered through residential institutions to old person & the handicapped
i. Welfare services delivered through residential institutions to children
ii. Child day-care services including day-care services for the handicapped
iii. Vocational rehabilitation services for handicapped
c) Tourism Services
i. Theme park
ii. Convention and exhibition center
iii. Travel agencies & tour operator services
iv. Hotel & restaurant services
v. Food serving services
vi. Beverage serving services for consumption on the premise
d) Transport Services
e) Sporting & Other Recreational Services
f) Business Services
i. Regional Distribution Centre
ii. International Procurement Centre
iii. Technical testing & analysis services
iv. Management consulting services
g) Rental/Leasing Services
h) Supporting & Auxiliary Transport Services

The Goals of the liberalizing service sector were to increase the sector competitive advantage globally and regionally, create employment opportunities, help in increasing the growth of the sector. Beside the liberalization, the government has continued to support and strength the service sector through strategies and targeting large foreign service investments to the country (MIDA, 2012).
2.1.3.1 Classifications of Malaysian Service industries

According to the Ministry of International Trade and industry (MITI) and with reference to the World Trade Organization (WTO) classification, service in Malaysia includes 12 subsectors namely:

i. Distributive Trade
ii. Transport and Storage
iii. Accommodation
iv. Food and Beverages
v. Information and Communication
vi. Financial Services
vii. Business Services
viii. Education
ix. Construction & Related Engineering
x. Health and Social Work
xi. Arts, Entertainment and Recreation
xii. Other Services

Treasury Malaysia in the Economic Report of 2012/2013 divided the service sector into three divisions: intermediate, final, and government services. Intermediate services include finance and insurance; transportation and storage; communication; and real estate and business services. Final services include hotels and restaurants; wholesale and retail trade; utilities; and other services. While the Government services recorded separately.

The Malaysia Standard Industrial Classification 2008 (MSIC 2008), which is based on the International Standard Industrial Classification of All Economic Activities (ISIC) of United Nations, provides the definition of each subsector as follow:

i. Distributive Trade Services refers to Wholesale Trade and Retail Trade
ii. Transportation and storage refers to provision of passengers or freight transport.
iii. Accommodation Services refers to provision of short-stay for visitors and other travelers.
iv. Food and Beverage refers to providing meals and drinks fit for immediate consumption.
v. Information and Communication refers to production and distribution of information and cultural products, the provision of the means to transmit or distribute these products, as well as data or communications, information technology activities and the processing of data and other information services activities.

vi. Financial Services refers to all activities of financial intermediation

vii. Business refers to all activities under Real Estate Services, Professional, Scientific and Technical Services and Administrative and Support Services.

viii. Education Services includes education at any level or for any profession, oral or written as well as by radio and television or other means of communication.

ix. Health and Social Work Services refers to activities starting from health care provided by trained medical professionals in hospitals and other facilities, over residential care activities that still involve a degree of health care activities to social work activities without any involvement of health care professionals.

x. Art, Entertainment and Recreation Services includes a wide range of activities to meet varied cultural, entertainment and recreational interests of the general public, including live performances, operation of museum sites, gambling, sport and recreation activities.

Based on Malaysian Economic Census Report 2011 of service sector, Department of Statistics Malaysia, the most active subsector is the Distributive Trade achieved revenue of RM 687.3 billion or 53.2% of the total service sector revenue and 13.6 of GDP. Then the financial services with revenue of RM270.1 billion or 20.9% of the total service sector revenue and 11.7 of GDP. Then the Information and Communication sector with revenue of RM85.4 billion or 6.6% of the total service sector revenue as shown in table 2.2.

Table 2.2: Share of services Subsectors in Malaysian GDP in 2011
(Department of Statistics Malaysia, 2011; Treasury Malaysia, 2012)

<table>
<thead>
<tr>
<th>Subsector</th>
<th>Share of GDP %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributive Trade (Wholesale Trade, Retail Trade)</td>
<td>13.6</td>
</tr>
<tr>
<td>Financial Services</td>
<td>11.7</td>
</tr>
<tr>
<td>Business Services</td>
<td>5.5</td>
</tr>
<tr>
<td>Information and Communication</td>
<td>4.2</td>
</tr>
<tr>
<td>Transport and Storage</td>
<td>3.8</td>
</tr>
<tr>
<td>construction</td>
<td>3.2</td>
</tr>
<tr>
<td>Accommodation, Food and Beverages</td>
<td>2.4</td>
</tr>
<tr>
<td>All other services</td>
<td>9.5</td>
</tr>
</tbody>
</table>
Statistics of the census showed wholesale subsector the highest number of establishments (50% of the total number of service sector establishments) followed by food and beverage (24.6%) then transportation and storage (6.9%), refer to figure 2.1 and table 2.3.

![Pie chart showing the number of establishments by subsector.]

Figure 2.1: Percentage of establishments by subsector (% of the whole sector)  
(Department of Statistics Malaysia, 2011)

<table>
<thead>
<tr>
<th>Subsector</th>
<th>Number of establishments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distributive trade</td>
<td>295,431</td>
</tr>
<tr>
<td>Transport and storage</td>
<td>40,599</td>
</tr>
<tr>
<td>Accommodation</td>
<td>3,129</td>
</tr>
<tr>
<td>Food and beverages</td>
<td>145,320</td>
</tr>
<tr>
<td>Information and communication</td>
<td>2,379</td>
</tr>
<tr>
<td>Financial</td>
<td>5,653</td>
</tr>
<tr>
<td>Business services</td>
<td>38,260</td>
</tr>
<tr>
<td>Education</td>
<td>8,178</td>
</tr>
<tr>
<td>Health and social work</td>
<td>9,152</td>
</tr>
<tr>
<td>Arts, entertainment and recreation</td>
<td>6,307</td>
</tr>
<tr>
<td>Other services</td>
<td>36,729</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>591,137</strong></td>
</tr>
</tbody>
</table>
2.2 Total Quality Management

2.2.1 Definition of Total Quality Management

Reeves and Bender (1994) proposed four definitions of quality. The first definition is “quality is conformance to specifications”; the second definition is “quality is satisfying or exceeding customers’ expectations”; the third definition is “quality is achieving excellence standards”; and the fourth definition is “quality is creating value of products, services and process”.

Kanji (1990) defines TQM as the continuous way of being committed to continuous improvement to satisfy customers’ needs. Besterfield, Besterfield-Michna, and Besterfield (2003) define TQM from the same approach which is as philosophy and principles aim to ground the continuous improvement process in an organization. Wolkins (1996) also followed the same approach and defined TQM as a combination of managerial techniques and technical tools focused on organizational continuous improvement.

Ahire and Ravichandran (2001) added to continuous improvement customer satisfaction and define TQM as a philosophy of management seeking to improve process and product quality that lead to customer satisfaction. The same approach followed by Dean and Bowen (1994). They defined TQM as management philosophy characterized by techniques, principles, and practices.

Steingrad and Fitzgibbons (1993) define TQM from manufacturing and production approach. Their definition describes TQM as procedures and techniques aim to reduce defects of a production process/service delivery.

Evans and Lindsay (2008) defined TQM as a management philosophy that leads the success of organization through meeting customers’ expectation. And Zheng and Zhao (2009) described TQM as a system based on continuous feedback in order to improve the quality of services products using comprehensive techniques and methods.

From this review, many definitions were provided. Those definitions can be summarized in Garvin (1984) argument. Garvin argues that TQM definitions have five major approaches: (i) product-based approach; (ii) marketing, and operations
management approach; (iii) manufacturing-based approach; (iv) operation management value-based approach; and (v) user-based approach.

2.2.2 Origin and Evolution of TQM

Quality concepts first appeared with inspection methods in manufacturing, “then to quality control, quality assurance, quality management, Total Quality and currently Total Quality Management” (Flores-Molina, 2011). Works of TQM gurus like Deming, (1986) and Crosby (1979) provide evidences that the TQM evolution started with Japanese and American earlier manufacturing principles, philosophies and strategies (Lee et al., 2010)

Deming promoted the concept of “total quality” based on his participation and practical experience with Japanese companies (Flores-Molina, 2011). The main characteristics of this concept are:

i. Quality must be involved all process phases.
ii. Reducing the quality cost most involve all employees
iii. Continuous training.
iv. Aligning employee’s goals with organization business goals.
v. Employee commitment.
vi. Effective communication between leaders and employee.
vii. Continue development.

The next phase of TQM evolution was impacted by the significant growth of global free trade. In this phase, TQM became a competitive advantage for business organizations to survive in intensive market competition (Soltani et al., 2008). TQM in this phase focused and centered on continuous improvement at all levels business organization (Slack et al., 2004).

The next phase of TQM is phase focused on business excellence standardized awards frameworks. The most well-known three standardized awards are: The Malcolm Baldrige National Quality Award (MBNQA); The Deming Prize; and European Foundation for Quality Management (EFQM) (Soltani et al., 2008).
2.2.3 Implementation and Benefits of TQM

Based on four excellent models of TQM awards, Abdullah et al., (2009) categorized practices of TQM into two categories: soft TQM practices and hard TQM factors. They argued that the soft practices play much more important role on the implementation and results of TQM. Soft practices are: leadership, organizational learning, teamwork, process management, training, communication.

Lewis et al., (2006) examined TQM factors in the criteria of ISO 9001:2000 certification. Based on deeper analysis applied on data collected from eight countries, they pointed out 12 practices to be the most critical practices for TQM implementation and success. Those practices are: quality data and reporting, customer satisfaction, human resource utilization, management of process control, training and education, management commitment, continuous improvement, leadership, strategic quality planning, performance measurement, customer focus, and contact with suppliers and professional associates.

TQM has an optimistic results and outcomes on organization performance and operation (Zakuan et al., 2008; Abdullah et al., 2009; Kaynak 2003; Samson and Tersioviski 1999), especially in service organizations (Bon et al., 2012). Based on the literature review, trends of TQM implementation show that organizations would be subject to one of two main categories: those implementing TQM and those out of business market (Hoang et al., 2010). Hoang and his colleagues further argue that large firms with TQM implementation developed more innovations and gained higher competitive level compared to smaller firms in Asian region. They also found that firms using TQM systems achieved better innovations and higher market share.

TQM has significant positive impact on organizational performance (Zakuan et al., 2008). Their results indicated that organizations winner of MBNQA have developed and achieved high financial performance.
2.2.4 TQM Practices

Earlier studies on Quality Management (QM) practices investigated their criticality on business performance and business competitive advantages. Studies of Saraph et al., (1989) and Flynn et al., (1994) developed frameworks involved eight measurable eight QM practices. Many recent studies on the impact of QM on innovation (Kim et al., 2012) have followed those two frameworks.

Many frameworks of TQM practices were empirically developed (Ahire et al., 1996; Black & Porter, 1996; Kaynak, 2003; Motwani, 2001; Powell, 1995; Samson & Terziovski, 1999; Zeitz et al., 1997). Those studies investigated different relationships involved TQM. Examples, relationship between TQM practices and: operational performance (Samson & Terziovski, 1999), firm performance (Kaynak, 2003) and firm competitive advantage (Powell, 1995). Table 2.4 compares some of those earlier TQM practices frameworks. They all shared practices of leadership, people management, customer focus, continuous improvement and data and information usage.
Table 2.4: Comparing earlier frameworks of TQM practices

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Executive commitment, Adapting the philosophy, Closer to customers, Closer to suppliers, Benchmarking, Training, Open organizations, Employee empowerment, Zero defect mentality, Flexible manufacturing, Process improvement, Measurement</td>
<td>Top management commitment, Customer focus Supplier's quality management Design quality management Benchmarking Statistical process control usage Internal quality information usage Employee empowerment Employee involvement</td>
<td>Corporate quality culture, Strategic quality management, Quality improvement measurement systems, People and customer management, Operational quality planning, External interface management, Supplier partnerships, Teamwork structures, Customer satisfaction orientation, Communication of improvement information</td>
<td>Management support Use of data Suppliers relationship Supervision Improvement customers</td>
<td>Leadership, People management, Customer focus, Planning, Process management, Information and analysis, Organisational performance</td>
<td>Top management commitment Quality measurement and benchmarking; Process management; Product design; Employee training and empowerment; Supplier quality management Customer involvement and satisfaction</td>
<td>Management Leadership, Training, Supplier quality management, Employee Relations, Quality and data reporting, Process management, Product/service design</td>
<td></td>
</tr>
</tbody>
</table>
Table 2.4 (continued)

<table>
<thead>
<tr>
<th>Perspective of the study</th>
<th>Relationship between TQM and competitive advantage</th>
<th>Identifying critical factors of TQM</th>
<th>Measuring TQM practices and organizational culture</th>
<th>Relationship between TQM and operation performance</th>
<th>Identifying critical factors and performance measures of TQM</th>
<th>Relationship between TQM and firm performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents and Industry</td>
<td>371 manufacturing firms</td>
<td>54 respondents from manufacturing and service firms</td>
<td>204 respondents from 61 manufacturing and service organizations</td>
<td>886 respondents from manufacturing and service organizations</td>
<td>1024 respondents from manufacturing organizations</td>
<td>Literature review 382 respondents from 1884 business units including manufacturing and service.</td>
</tr>
</tbody>
</table>
2.2.5 Comparison of TQM in service organizations and manufacturing organizations

Earlier evolution of TQM focused on manufacturing operation and did not involve operation in service organizations (Yasin, Alavi, Kunt, & Zimmerer, 2004). Two factors have increased the need for TQM in service industry: significant growth of service industries and intensive market competition (Talib & Rahman, 2012).

Empirical studies have showed contradicted results regarding implementation of TQM in service industries compared to manufacturing industries (Rönnbäck & Witell, 2008). Some studies found positive relationship between TQM and innovation and some found negative relationship between the two. The contradiction emerges from two causes: first, from the difference in perspectives when studying TQM. For instance, one perspective is studying TQM as holistic management system. Other perspective is studying TQM as operation tool or method. Second, the inconsistency emerges from the unique characteristics of services compared to goods. For instance intangibility creates measurement problem (Lenka, Suar, & Mohapatra, 2010). Table 2.5 shows comparison of TQM practices between service and manufacturing organizations.

Table 2.5: Comparing TQM practices between service and manufacturing organizations (Lenka et al., 2010)

<table>
<thead>
<tr>
<th>TQM Practices in Service Organizations</th>
<th>TQM Practices in Manufacturing organizations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Human focus</td>
<td>Product/technology focus</td>
</tr>
<tr>
<td>Focus on top management commitment and visionary leadership</td>
<td>Focus on top management commitment and visionary leadership</td>
</tr>
<tr>
<td>Continuous improvement</td>
<td>Continuous improvement</td>
</tr>
<tr>
<td>Emphasis is on interpersonal relationship and communication skills</td>
<td>In recruitment and selection, emphasis is on technical skills</td>
</tr>
<tr>
<td>Statistical process control is inappropriate in professional services</td>
<td>Statistical process control is prescribed universally</td>
</tr>
<tr>
<td>Checks customer defections</td>
<td>Elimination of product defects</td>
</tr>
<tr>
<td>Quality measurement through customer satisfaction</td>
<td>Quality measurement by statistical techniques</td>
</tr>
</tbody>
</table>
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