# IMPACT OF TOTAL QUALITY MANAGEMENT PRACTICES ON INNOVATION IN SERVICE ORGANIZATIONS

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This research work is dedicated to my father, my late mother, my wife and my brothers and sisters

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## ABSTRACT

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

Dua dekad yang lalu, industri perkhidmatan telah menyumbang terhadap peningkatan Keluaran Kasar Dalam Negeri secara signifikan tidak kira dalam negara mahupun global dalam ekonomi yang maju dan juga membangun. Inovasi memainkan peranan yang signifikan dalam menambah daya saing dalam senario ini. Inovasi dalam organisasi perkhidmatan telah menjadi subjek penting agenda penyelidikan dari segi teori dan praktikal. Kepentingan inovasi perkhidmatan dapat dilihat melalui kepentingan perkhidmatan terhadap organisasi pembuatan. Tidak dapat dinafikan bahawa implementasi sistem Pengurusan Kualiti Menyeluruh (TQM) meningkatkan inovasi dan prosesnya melalui pengamalannnya seperti penambahbaikan secara berterusan dan fokus terhadap pelanggan. Banyak kajian telah mengkaji hubung kait antara TQM dan inovasi tetapi kebanyakannya tidak dalam konteks organisasi-organisasi perkhidmatan. Penyelidikan ini mengkaji tentang impak Pengurusan Kualiti Menyeluruh terhadap inovasi dalam organisasi perkhidmatan. Data telah dikutip melalui kaedah tinjauan daripada organisai perkhidmatan yang beroperasi di Malaysia di bawah subsektor perkhidmatan yang berlainan. Teknik “Confirmatory Factor Analysis” telah digunakan untuk mengesahkan konstruk yang terlibat di dalam model kajian. Model pengukuran telah disahkan menggunakan kaedah penilaian Goodness-of-fit indices, Convergent validity, Content validity, and Discriminant validity dan Multicoleanarity assessment.“Structural Equation Modeling” telah dibentuk dengan menggunakan “Analysis of Moment Structures” atau AMOS untuk menguji hipotesis. Ujian terhadap hipotesis telah mengesahkan bahawa fokus terhadap pelanggan dan pengurusan manusia adalah amalan TQM yang memberi impak positif terhadap inovasi dalam organisasi-

organisasi yang telah ditinjau. Selain dari itu, “Radical Process Innovation” dan “Radical Service Innovation” adalah jenis inovasi yang paling memberi kesan positif terhadap amalan TQM. Hasil dapatan boleh membantu organisasi perkhidmatan mengaitkan antara implementasi TQM dengan inovasi secara positif. Penyelidikan ini telah memberi sumbangan yang unik dari segi pengamalan TQM dalam organisasi-organisasi perkhidmatan. Penyelidikan ini telah menambah perspektif organisasi-organisasi perkhidmatan dalam perbahasan tentang hubung kait antara TQM dan inovasi. Keputusan penyelidikan ini boleh diaplikasikan dalam organisasi-organisasi perkhidmatan swasta dan awam. Pengurus-pengurus dan pengamal-pengamal dalam organisasi-organisasi boleh memanfaatkan penyelidikan ini dengan mempraktikkan TQM untuk inovasi.

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| | | |
|---|---|---|
| AD | - | Administrative Innovation |
| AMOS | - | Analysis of Moment Structures |
| AVE | - | Average Variance Extracted |
| CFA | - | Confirmatory Factor Analysis |
| DF | - | Degree of Freedom |
| CF | - | Customer Focus |
| CFI | - | Comparative Fit Index |
| CI | - | Continuous Improvement |
| CR | - | Construct Reliability |
| CMIN | - | Minimum Discrepancy |
| EFA | - | Exploratory Factor Analysis |
| EI | - | Employee Empowerment |
| EFQM | - | European Foundation for Quality Management |
| EM | - | Employee Involvement |
| FMM | - | Federation of Malaysian Manufacturers |
| GDP | - | Gross Domestic Product |
| GFI | - | Goodness of Fit Index |
| GOF | - | Goodness of Fit |
| HRM | - | Human Resource Management |
| IA | - | Information Analysis |
| IPI | - | Incremental Process Innovation |

ISI - Incremental Servie 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 Excellency 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 - Tuker-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

# CHAPTER 1

# INTRODUCTION

## 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.

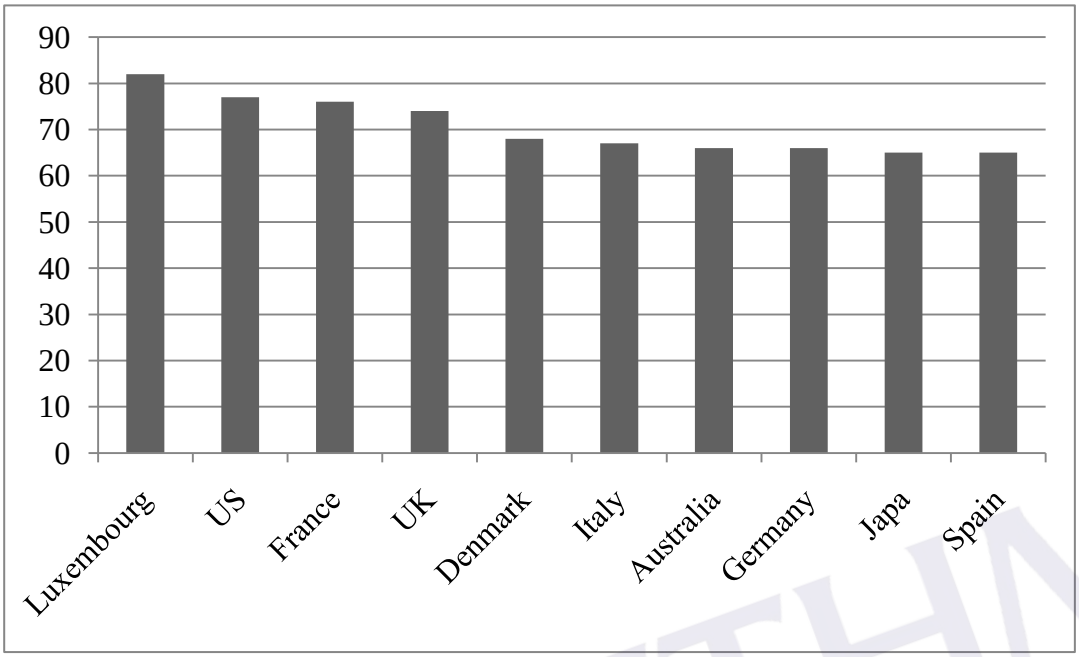


Figure 1. 1: Shares of service sector in % of GDP in some countries
(OECD, 2008)

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).

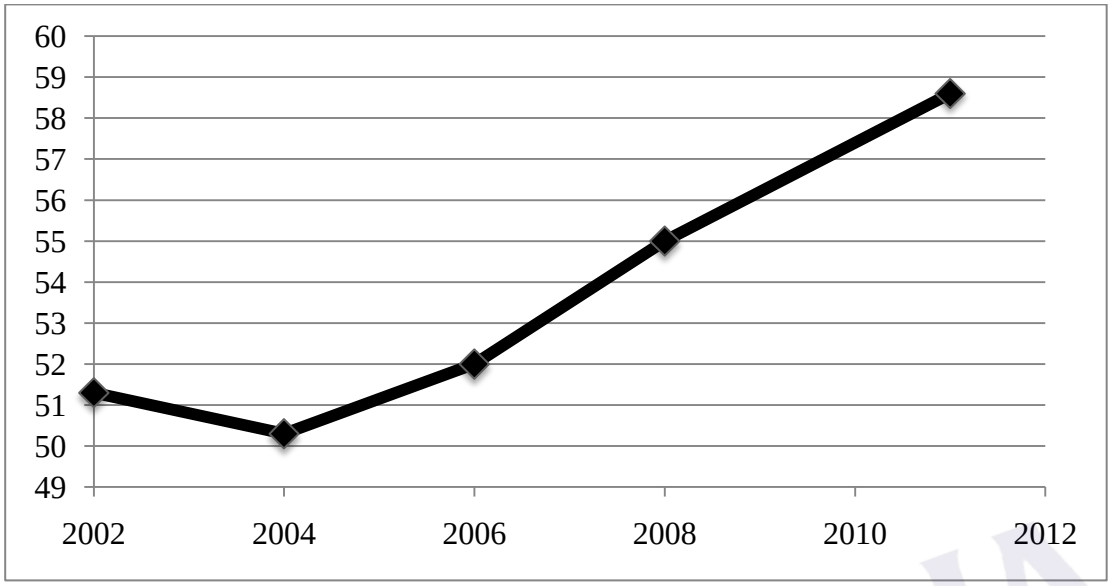


Figure 1. 2: Share of service sector % of GDP of Malaysia

(Statistics-Malaysia, 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 6$^{th}$ 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

| Study | Data source |
|---|---|
| Hoang *et al.,* (2006) | 204 manufacturing and service firms in Vietnam |
| Martinez -Costa and Martinez-Lorente (2008) | 451 manufacturing and nonmanufacturing firms in Spain |
| Abrunhosa and Moura E Sa (2008) | 20 footwear manufacturing firms in Portugal |
| Santos -Vijande and Alvarez-Gonzalez (2007) | 93 ISO 9000 certified firms (manufacturing and service) in Spain |
| Sadikoglu and Zehir (2010) | 373 firms from different industries in Turkey |
| Perdomo-Ortiz *et al.,* (2009) | 102 machinery and instruments firms in Spain; 106 Spanish industrial firms in Spain |
| Ooi *et al.,* (2012) | 206 manufacturing companies in Malaysia |

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 is 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.

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