CHAPTER II

LITERATURE REVIEW

2.0 Introduction

This chapter presents the literature review of total quality management, which supports the purpose of this study through exploring and summarizing the related literature.

This chapter is divided into nine sections. First and second sections discuss definitions, theory, and concepts of total quality management based on literature review from quality leaders. These sections also reveal and discuss the results of empirical studies that carried out in total quality management field. Third section shows and discusses total quality management award models such as Deming Prize, Malcolm Baldrige National Quality, and European Quality Award.

Forth section discuses the human side of total quality management. It is divided into two subsections. First, argues the critical factors of total quality management implementations that identified by a set of empirical studies. Second discusses the human factors of total quality management and their importance to total quality management implementations.

Organization performance understanding and measurement and the relationship between human factors and organization performance are discussed in sections five and six. Sections seven and eight present the quality improvement philosophy and the relationship of human factors and quality improvement practices. Finally, section nine summarizes the literature review chapter.

2.1 Definition of total quality management

Total quality management is considered as an important approach, which was built by total quality management gurus such as Deming, Juran, Crosby, Isikawa and Feigenbaum. It has been used during the last few decades by companies throughout the world to develop quality and improve organizational performance.

Quality management gurus defined total quality management program in different ways. Deming (1986) defined quality as a continuous quality improvement process towards predictable degree of uniformity and dependability. And Juran (1993) defined quality as "fitness for use". He considers that everyone in organization must contribute in effort of achieving the quality aims. Moreover, Crosby (1979) focused on "zero defect" and "do it right in the first time", he defined it as a conformance to requirement. But, Isikawa (1985) considered that quality does not only mean the quality of product, but it also means the quality of service after sales. Finally, Feigenbaum (1991) suggested that the quality is continuous work processes start with customer requirements and end with customer satisfaction.

United State Department of Defence in 1988 described total quality management as a series of continuous improvement activities involving everyone in the company in a totally effort toward improving performance at every level in the company. According to International Standardization Organization (ISO) 8402 (1994), quality management can be defined as "All activities of the overall management function that determine the quality policy, objectives and responsibilities, and implement them by means such as quality planning, quality control, quality assurance and quality improvement within the quality system".

Furthermore, Ross and Robert (1992) considered total quality management as a people- focused management system which aim to increase customer satisfaction at continually lowering real cost. Vinzant and Douglas (1996) defined total quality management as a total organizational approach to meet the needs and the expectations of the customer that involved all managers

and employees in using quantitative methods to continuously improve the processes, products, and services of the organization.

Besides, Flynn et al. (1994) defined total quality management as "an integrated approach to achieving and sustaining high quality output, focusing on the maintenance and continuous improvement of processes and defect prevention at all levels and in all functions of the organization, in order to meet or exceed customer expectations". Anderson et al. (1994) considered total quality management as a holistic approach that can lead to increase organization quality through internal and external cooperation, effective process management, product design, learning, customer focus, employee involvement, and continues improvement.

Despite the differences between scholars and practitioners over the definition of total quality management and its components most of the definitions emphasize on concepts that including customer orientation, human resources focus, management structure, quality tools, and supplier support.

Therefore, the total quality management in this study can be defined as an important approach impact all processes and practices of management, which become as the most essential method to realize customer satisfaction and enhance and achieve competitive advantage.

2.2 Total quality management theory and concepts

Amoundson (1998) considered the theory acts to define, establish and explain relationship between concepts or constructs. However, Dale et al. (2001) suggested that the total quality management is still in the early stage of theory, while Klimoski (1994) pointed out that the total quality field has been taken a place and has already got enough for sufficient empirical and theoretical. Actually, total quality management researches interested on practices rather than theory; that was due to total quality management philosophy which was led by practitioners (quality gurus) rather than academic researchers (Dale et al., 2001; Sitkin et al., 1994).

As literature of quality management suggested that quality management has made revolution in business environment, and has changed methods of work. These new methods appear in new approaches of quality management that have built from quality management leaders (such as Deming, Juran, Crosby Isikawa, and Feigenbaum), which their work provided a foundation for the development of total quality management theory.

Deming in his work focused on creating an organizational system, that adopt cooperation and learning to facilitate the implementation of process management in order to enhance customer satisfaction and firm's survival through continues improvement of process, product and service and employees fulfilment (Anderson et al., 1995). Juran et al. (1993) considered quality as a system that includes activities to achieve the delighted customer, the empowered employees, the higher revenues and the lower costs. Crosby (1979) emphasized on making methods lead to prevention rather than- after the event inspection, which doing things right for the first time, and he claimed that zero defect reduces the cost of quality. Isikawa (1985) claimed that the successful of firms is based on treating quality improvement as never-ending quest, which can ensure that people will never stop learning and improving their skills.

Management role in achieving quality aims has received much more discussion from quality gurus. Deming (1986) considered top management as the responsible on driving the changes in process and system, and the leadership is the responsible to put clear standards of acceptable work to employees and create an appropriate environment and provide methods to complete quality aims.

Another argument says that quality problems come due to management rather than workers (Juran et al., 1993). Juran emphasized on the importance of top management commitment and empowerment, participation, recognition and rewards. He considered team and project acting to enhance quality improvement through improving the communication and coordination between management and employees and enhance coordination among employees. Crosby (1979) identified the management participation, management

responsibility for quality, the employee recognition and education as important principles and practices for successful quality improvement program. Also, he considered changing the thinking of top management is the key to quality improvement.

Employees play a key role in implementing of quality improvement. Thus, employees have taken a lot of attention in quality programs to achieve aims of quality. Quality approaches emphasis on improving employees' abilities to carry out the requirements of quality through enhancing their education and training. Quality gurus (Deming, 1986; Grosby, 1979; Juran et al., 1993; and Ishikawa, 1985) put employee's participation, empowerment, teamwork, training, education, communication, and recognition and rewards as important principles and practices for quality improvement program.

Furthermore, customer satisfaction become as a central aim for researchers in total quality management domain. Deming (1986) emphasized on the importance of measurement of customer requirement. Feigenbaum (1991) said "the quality chain starts with the identification of all customer requirements and ends only when product or service is delivered the customer". That means, all the resources and activities of organization perform to explore and achieve customer requirements.

Moreover, international quality management awards such as the Deming Prize that was established in Japan in 1951, the Malcolm Baldrige National Quality Award that was established in USA in 1987, and the European Quality Award that was established in Europe in 1991 contribute to total quality management theory through their criteria which act to enhance the implementations of total quality management.

Above and beyond, there are many empirical studies carried out in the field of total quality management, those studies measured and identified a set of total quality management practices as critical success factors for the implementation of total quality management implementations (e.g. Oprime et al., (2012); Wahid and Corner (2009); Fotopoulos et al., (2009); Sarma and Kodali (2008); Antony et al., (2002), Zhang (2000); Yusof and Aspinwall

(1998); Hesan et al., (1998); Black and Porter (1996); Tamimi and Gorshon (1995); Badri et al., (1995); Flynn et al., (1994); Porter and Parker (1993).

Although, few studies emphasis on the human side of total quality management such as leadership, communication, training and education, employees involvement, teamwork, reward and recognition, customer focus, and supplier relations (e.g. Abdullah et al., 2008; Rahman and Bullock, 2005; Ho et al., 2001; Flynn et al., 1995; and Wilkinson, 1994), this study is interested on the relationship of total quality management implementations and organizational performance through investigating the direct and indirect impact of human factors of quality management on quality improvement and organization performance.

2.3 International quality awards

Total quality management awards are an important contribution to the field of total quality management; since these international quality awards act to enhance the implementation of total quality management through their criteria.

There are famous international quality awards throughout the world such as the Deming Prize (Japan, 1951), the Malcolm Baldrige National Quality Award (United State of America, 1987), and European Quality Award (Europe, 1991). These quality awards however, established to encourage companies to improve total quality management implementations. According to Stading and Vokurka (2003), the best known international quality awards are Japan's Deming Prize, the USA's Malcolm Baldrige National Quality Award, and the European Quality Award.

In terms of implementation, quality awards are strongly associated with quality improvement practices and organizational performance, which according to Dick (2000), quality awards or certification are linked with improved quality system that leads to better quality and hence to better business performance.

Indeed, many companies around the world used these international awards as criteria to improve their quality operations, which help in enhancing their practices and achieving higher performance. Thus, quality awards act to increase the awareness of total quality management and ensure continuous improvement contribution to superior competitiveness (Ghobadianand and Woo, 1996).

Some researchers used these international quality awards to identify the critical factors of quality management (e.g. Black and Porter, 1996 and Quazi and Padibjo, 1998). According to Ghobadianand and Woo (1996), quality awards are acting to increase awareness of total quality management and ensure the continuous improvement contribution to superior competitiveness. Thus, quality awards provide a set of criteria for business organizations to ensure a degree of quality performance.

In fact, all total quality management awards around the world include both human and technical factors of quality management. These awards include human factors such as leadership, human resource focus, customer focus and satisfaction, employee involvement and empowerment, and supplier relations. According to Zhang et al. (2000), in addition to their focusing on product and service perfection or traditional quality management methods the international quality awards also interest on a wide range of management activities, behaviour and process, which influence the final implementation of total quality management.

The following sections take a view for the international quality awards.

2.3.1 The Deming prize

Deming Prize was established in Japan in 1951 by the Japanese Union of Science and Engineering (JUSE), it is a forerunner of the national quality award fashion. Deming prize was a primary purpose to spread the quality gospel by recognizing performance improvements issuing from successful implementation of companies or total quality control base on statistical quality control techniques (Ghobadian and Woo, 1996).

The Checklist of Deming prize includes a set of criteria that work as a map leading the companies to improve their processes towards higher organizational performance. According to Zhang (2000), the Checklist of Deming Prize is involved by human and technical factors of quality management, which emphasizes on the important of top management role for quality management implementations and understanding of quality management processes and requirements.

Concerning this study, the used human factors such as leadership, employee involvement, training and education, and customer focus are included in the Checklist of Deming prize. Additionally, other human factors that do not connect to the current study are also included such as communication and human resource management.

As Deming Application Prize (1996), the primary elements in the Deming Application Prize are shown in Table 2.1

Table 2.1: Check list of application for Deming Prize

Elements	Details
Policies	- Quality and quality control policies and their place in overall business management. - Clarity of policies (targets and priority measures). - Methods and processes for establishing policies. - Relationship of policies to long- and short-term plans. - Communication (deployment) of policies, and grasp and management of achieving policies. - Executives and managers leadership.
Organization	- Appropriateness of the organizational structure for quality control and status of employee involvement. - Clarity of authority and responsibility. - Status of interdepartmental coordination. - Status of committee and project team activities. - Status of staff activities. - Relationships with associated companies (group companies, vendors, contractors, sales companies, etc.).
Information	- Appropriateness of collecting and communicating external information. - Appropriateness of collecting and communicating internal information. - Status of applying statistical techniques to data analysis. - Appropriateness of information retention. - Status of utilizing information. - Status of utilizing computers for data processing.

Table 2-1 continued…

Elements	Details
Standardization	- Appropriateness of the system of standards. - Procedures for establishing, revising, and abolishing standards. - Actual performance in establishing, revising, and abolishing standards. - Content of standards. - Status of utilizing and adhering to standards. - Status of systematically developing, accumulating, handling down, and utilizing technologies.
Human resources development and utilization	- Education and training plans and their results. - Status of quality consciousness, consciousness of managing jobs, and understanding of quality control. - Status of supporting and motivating self-development and self-realization. - Status of understanding and utilizing statistical concepts and methods. - Status of QC circle development and improvement suggestions. - Status of supporting the development of human resources in associated companies.
Maintenance/control activities	- Rotation of management (PDCA) cycle. - Methods for determining control items and their levels. - In-control situations (status of utilizing control charts and other tools). - Status of taking temporary and permanent measures. - Status of operating management systems for cost, quantity, delivery, etc. - Relationship of quality assurance system to other operating management systems.

Table 2-1 continued…

Elements	Details
Improvement activities	- Methods of selecting themes (important problems and priority issues). - Linkage of analytical methods and intrinsic technology. - Status of utilizing statistical methods for analysis. - Utilization of analysis results. - Status of confirming improvement results and transferring them to maintenance/control activities. - Contribution of QC circles activities.
Effects	- Tangible effects (such as quality, delivery, cost, profit, safety, and environment). - Intangible effects. - Methods for measuring and grasping effects. - Customer and employee satisfaction. - Influence on associated companies. - Influence on local and international communities.
Future plans	- Status of grasping current situations. - Future plans for improving problems. - Projection of changes in social environment and customer requirements and future plans based on these projected changes. - Relationships among management philosophy, vision and long-term plans. - Continuity of quality control activities. - Concreteness of future plans.

2.3.2 The European Model for TQM

European Quality Award is one of the famous international quality awards, which is used by many companies in different countries. It was officially established by European quality award in 1991 to support and encourage European Companies to implement total quality management program. Actually, this quality award is used by many companies throughout the world as a criterion to enhance their processes and increase organization quality performance.

Human and technical sides of quality management are essential criteria in European Quality Award, which include human side activities such as top management support, customer satisfaction, and employee satisfaction, in addition to the human factors that draw on this study such as leadership, customer focus, employee involvement, supplier relation, training and education, and recognition.

The European Quality Award includes criteria that were divided into two aspects, enablers and results; they are shown in Table 2.2.

Table 2.2: Check list of application for The European quality award

Elements	Details
Leadership	- Visible involvement in leading total quality; - A consistent total quality culture; - Timely recognition and appreciation of the effects and successes of individuals and teams; - Support of total quality by provision of appropriate resources and assistance; - Involvement with customers and suppliers; - Active promotion of total quality outside the organization.
Policy and strategy	- How policy and strategy are based on the concept of total quality; - How policy and strategy are formed on the basis of information that is relevant to total quality; - How policy and strategy are the basis of business plans; - How policy and strategy are communicated; - How policy and strategy are regularly reviewed and improved.
People management	- How continuous improvement in people management is accomplished; - How the skills and capabilities of the people are preserved and developed through recruitment, training and career progression; - How people and teams agree on targets and continuously review performance; - How the involvement of everyone in continuous improvement is promoted and people are empowered to take appropriate action; - How effective top-down and bottom-up communication is achieved.
Resources	- Financial resources; - Information resources; - Material resources and fixed assets; - The application of technology

Table 2-2 continued…

Elements	Details
Processes	- How processes critical to the success of the business are identified; - How the organization systematically manages its processes; - How processes performance measurements, along with all relevant feedback, are used to review processes and to set targets for improvement; - How the organization stimulates innovation and creativity in processes improvement; - How the organization implements process changes and evaluates the benefits.
Customer satisfaction	---
People satisfaction	---
Impact on society	---
Business results	---

2.3.3 The Malcolm Baldrige National Quality Award

The Malcolm Baldrige National Quality Award was established by United State congress in United State of America in 1987 to make awareness towards the importance of total quality management practices, which improves quality, satisfies customers in American Companies in order to enhance performance and capabilities of companies, which ensure competitive advantage (Zhangl, 2000).

Many empirical studies in literature of quality management have used the criteria of this award to investigate the implementation of total quality management practices. This award also includes both human and technical sides of quality management that related to this study. The Malcolm Baldrige National Quality Award includes some of the human factors that were used (such as leadership, customer focus, employee involvement, education and training, and supplier relation). Moreover, other human factors that were not involved in this study (such as employee satisfaction and human resource results) are included.

The Malcolm Baldrige National Quality Award model framework (1999) is shown in Table 2.3.

Table 2.3: Check list of application for Malcolm Baldrige National Quality Award

Elements	Details
Leadership	- Organizational leadership; - Public responsibility and citizenship.
Strategic planning	- Strategy development; - Strategy deployment.
Customer and market focus	- Customer and market knowledge; - Customer satisfaction and relationships.
Information and analysis	- Measurement of organizational performance; - Analysis of organizational performance.
Human resource focus	- Work systems; - Employee education, training, and development - Employee well-being and satisfaction
Process management	- Product and service processes; - Support processes; - Supplier and partnering processes
Business results	- Customer focused results; - Financial and market results; - Human resource results; - Supplier and partner results; - Organizational effectiveness results

2.4 Human side of total quality management

Since it has been described the background of total quality management, it is now appropriate to introduce literature related to human side of quality management.

As mentioned earlier, total quality management approach was built by quality leaders, who made the main structure of total quality management, in addition to the contribution of international quality awards such as Deming Prize in Japan, European Quality Award in Europe and Malcolm Baldrige National Quality Award in the United States of America.

Recently, many studies were carried out to identify and evaluate the critical successful factors of total quality management from one side, and also to discover the importance of these factors to the implementation of total quality management from the other side. Moreover, other studies in literature were interested in dividing total quality management practices, they divided the critical factors of quality management into two groups; either hard and soft factors or technical and human factors respectively.

The following sections take a view for the human side of total quality management starting from the identifying of critical factors of quality management and the dividing these factors into technical and human factors. Besides, deep discussion on human factors that used in this study and the relationship between these human factors and quality improvement practices and organization performance.

2.4.1 Critical factors for total quality management implementations

It is difficult to identify and measure the critical success factors of quality management (Zairi, 1994). However, the literature identified a set of total quality management practices as critical successful factors for the implementation of total quality management.

Oakland (2000) provided a general definition of critical factors of quality management that influence the organizational or a management system in business environment. He defined critical factors as the critical areas that the organizations should carefully examine and categorize their impacts on the system as well as on the whole organization in order to successfully manage them and achieve the effective implementation of the system and the organization's mission.

Saraph et al. (1989) pioneered an empirical approach to identify and measure the critical factors of total quality management implementation in the United State of America. They argued that no systematic attempt had been made in the literature to organize and synthesize the various sets of critical factors, the measures of overall organizational management or of any individual critical factors identified by different quality gurus.

Later, some authors have developed a similar approach to identify and investigate the critical success factors for total quality management implementation (such as Oprime et al., 2012; Guion, 2010; Fotopoulos et al., 2009; Wahid and Corner, 2009; Sarma and Kodali, 2008; Antony et al., 2002; Zhang, 2000; Hesan et al., 1998; Yusof and Aspinwall, 1998; Black and Porter, 1996; Tamimi and Gorshon, 1995; Badri et al., 1995; Flynn et al., 1994; and Porter and Parker, 1993). All those studies were carried out based on previous literature and approaches of total quality management leaders. In addition, some of them were carried out based on the standard of the previously mentioned international quality awards (such as Black and Porter, 1996 and Quazi and Padibjo, 1998). Table 2.4 review those critical factors that were developed by researchers.

Saraph et al. (1989) claimed that the identification and measurement of critical factors of quality management implementation would be useful to both decision makers and researchers. According to them, the collection of quality data such as defect rate, error rate, rework cost and scrap cost is classified as a measure of quality performance not a measure of organization-wide quality management.

However, they have made the first attempt to identify and measure the critical factors of quality management and they declared that this operational measurement would be useful to both decision makers and researchers. It makes decision makers capable to know the status of the organization controllable to make organization-wide improvement in quality management.

Furthermore, Saraph et al. identified and measure eight factors from the literature of total quality management as critical factors of quality management implementations in business unit see Table 2.4. They used questionnaire technique and factor analysis from 162 general measures and quality managers of 89 divisions to measure manager's perceptions of eight critical factors of quality management implementation in 20 companies at the business level.

Flynn et al. (1994) claimed that a weak development and measurement is related to reliability and validity in the quality management literature. They identified seven dimensions of quality management, and they tested the measurement of these dimensions' reliability and validity, and then, they established a framework to evaluate quality management program by researchers and practitioners. They emphasized in their processes and analysis on the measurement rather than the quality performance. Flynn et al, identified seven dimensions of quality management based on search on a sample of 716 respondents at 42 plants in the United State of America, in the transportation component, electronics and machinery industries. The seven dimensions are shown in Table 2.4.

Porter and Parker (1993) suggested that there is no agreement or identification to the key elements of total quality management or the critical factors that influence the total quality management implementations. Thus, they attempted to identify the critical factors that influence total quality management implementations, which were based on Saraph's attempt in 1989 and the criteria of the Malcolm Baldrige National Quality Award (1992). While Flynn et al. (1994) identified seven dimensions of quality management, Porter and Parker identified eight critical factors to total quality management implementation by

survey on 10 organizations in United Kingdom through an in-depth interview technique, see Table 2.4.

Tamimi and Gorshon (1995) attempted to develop a tool for assessing total quality management practices. They used Deming philosophy as a guide to develop a survey instrument for the purpose, and they used Deming' 14 points as a critical factors. Ahier et al. (1996) developed an instrument to measure the key quality management constructs by testing 371 automotive companies. They attempted to make comprehensive approach to identify and validate the critical success factors of total quality management. Regarding the critical factors of total quality management, they identified 12 critical factors as shown in Table 2.4.

Black and Porter (1996) established research methodology to improve self-assessment framework to better inform organizations in the development of total quality system. They used Baldrige quality award criteria to derive 10 critical factors to the implementation of total quality management by questionnaire carried out over 200 managers in industries companies in United State of America and Europe. These factors are shown in Table 2.4.

Yusof and Aspinwall (1999) reviewed and analyzed the critical success factors that were developed by previous authors in small and medium enterprises; they used questionnaire to meet the purpose of their study. Zhang (2000) said "the implementation of total quality management cannot be successes without utilizing suitable quality management methods". Zhang developed a model of quality management methods to assess the organization's strength and weaknesses in order to improve business performance. He focused on the effect of quality management methods on business performance through 212 manufacturing companies in China.

Guion (2010) claimed that critical success factors such as leadership, strategic planning, competitive benchmarking, process management, human resource development, education and training, quality tools, information and analysis, customer management, and supplier management have an important impact on total quality management implementations and organizational performance.

Recently, Oprime et al. (2012) identified and analyzed a set of factors as critical success factors to the implementation of total quality management in Brazilian companies. They identified staff training in problem solution tools, incentives for suggestions, face-to-face communication and regular shop floor visit as critical factors to the implementation of total quality management. They used a survey throughout 46 industrial companies.

Other attempts to identify critical success factors were carried out in different environments such as Badri et al. (1995) in Middle East (UEA), Hesan et al. (1998) in Singapore, Antony et al. (2002) in Hong Kong, Wahid and Corner (2009) through case study on XYZ Limited in Malaysia, Fotopoulos et al. (2009) in Greek.

Therefore, based on the empirical studies and models and frameworks that have been discussed earlier, researcher built the mean structure of study, which found that human factors such as leadership, customer focus, employee involvement, supplier relation, training and education, and reward and recognition are essential factors for the implementation of total quality management and organization performance. The following sections discuss in detail human factors and their relationship with quality improvement practices and organization performance.

Critical success factors of quality management are summarized in Table 2.4

Table 2.4: The critical success factors of quality management

Authors	Period	Critical factor
Seraph et al.	**1989**	1-Top management leadership 2-Role of the quality department 3-Training 4-Product design 5-Supplier quality management 6-Process management 7-Quality data 8-Employees relations.
Porter and Parker	**1993**	1-Management behaviour 2-Strategy for total quality management 3-Organization for total quality management 4-Communication 5-Training and education 6-Employee involvement 7-Process management and strategy 8-Quality technologies
Flynn et al.	**1994**	1- Top management support 2- Quality information 3- Process management 4- Product design 5- Work force management 6- Supplier involvement 7- Customer involvement.

Table 2.4: continued…

Authors	Period	Critical factor
Ahier et al.	**1996**	1- Top management commitment; 2- Customer focus 3- Supplier quality management 4- Product design quality management 5- Benchmarking 6- Statistical process control (SPC) 7- Sharing internal quality data 8- Employee empowerment 9- Employee involvement 10- Employee training 11- Product quality 12- Supplier performance
Black and Porter	**1996**	1- People and customer management 2- Supplier partnerships 3- Communication of improvement information 4- Customer satisfaction orientation 5- External interface management 6- Strategic quality management 7- Teamwork structures for improvement 8- Operational quality planning 9- Quality improvement measurement system 10- Corporate quality culture

Table 2.4: continued…

Authors	Period	Critical factor
Tamimi	**1998**	1- Top management commitment. 2- Supervisory leadership 3- Education 4- Cross functional communication to improve quality 5- Supplier management 6- Quality training 7- Product/service innovation 8- Providing assurance to employee
Antony et al	**1998**	1- Training and education 2- Quality data and reporting 3- Management commitment 4- Customer satisfaction 5- Role of the quality department 6- Communication to improve quality 7- Continuous improvement
Sharma and Kodali	**2008**	1- Supplier focus/management 2- Leadership 3- People/change management 4- Process management 5- Knowledge management 6- Societal impact/responsibility 7- Continuous improvement 8- Performance measures 9- Customer satisfaction/focus
Oprime et al.	**2012**	1- Staff training in problem solution tools 2- Incentives for suggestions, 3- Face-to-face communication 4- Regular shop floor visit

2.4.2 Human factors of quality management

Through explore an extensive literature of quality management, there were lacks of studies emphasizing on human factors of quality management while most studies were carried out to contribute the design development and application of the total quality system (Lau and Idris, 2001).

Due to the production orientation of the gurus of quality management, in the implementation of total quality management there is insufficient attention for the human factors of quality management such as leadership, communication, training and education, employee involvement, teamwork, reward and recognition, customer focus, and supplier relations (Hill, 1991, Wilkinson, 1992, Louise, 1996).

Thus, as a result of the orientation total quality management gurus, more attention was paid to the technical factors of total quality management, which emphasis on tools and systems of quality management when the organization rework their process to implement total quality management practices. According to Holman et al. (2005), the technical elements of quality management have the greatest effect on work design, whilst the human factors of quality management have the greatest effect upon employee orientation towards the work role. However, literature of quality management suggest that the technical factors of quality management must be combined with the extensive use of human factors, which the lack of attention to the human side of quality management can lead to a limited success of total quality management (Edward and Sohal, 2003).

Although the technical orientation of total quality management gurus, the human factors of quality management were considered in their quality approaches. In fact, the management commitment, employee role and customer satisfaction dimensions have much more discussion in the work of total quality management gurus.

The quality gurus considered management support play a central role to achieve total quality management aims, which Deming (1986) considered top management commitment as the responsible to drive the changing in processes and system, and also the responsible to put clear standards of acceptable work to employees and create appropriate environment in addition to provide methods to complete quality aims. Besides, quality problems come due to management rather than workers (Juran et al., 1993). Juran et al. emphasized on the importance of top management commitment and empowerment, participation, recognition and rewards. He suggested that team and project act together to enhance quality improvement through improvement of communication and coordination between management and employees and enhancing coordination among employees themselves. Moreover, Crosby (1979) identified the management participation, management responsibility for quality, employee recognition and education as important principles and practices for successful quality improvement program. Also, he considered change the thinking of top management is the key to quality improvement.

Employee's role also has been given a lot of consideration in total quality management approaches, which quality gurus put employee participation, empowerment, teamwork, training, education, communication, recognition and rewards as important principles and practices for quality improvement program.

Furthermore, customer involvement and satisfaction were considered in the approaches of quality gurus, which Deming (1986) emphasized on the importance of measurement of customer requirement. Feigenbaum (1991) claimed that the quality chain starts with the identification of all customer requirements and ends only when product or service is delivered to the customer. The importance of customer satisfaction was essential in Juran's approach. In fact, Juran et al., (1993) considered the understanding of customer requirements is very important to ensure design quality that meet customer needs through the use of techniques including quality deployment, experimental design, reliability engineering and concurrent engineering.

On the Other hand, the criteria of total quality management awards such as Deming Prize, Malcolm Baldrige National Quality, and European Quality Award consider the human factors of quality management such as customer involvement and satisfaction, top management commitment, communication, training and education, employees involvement, teamwork, reward and recognition, and supplier relations.

In general, quality management gurus and international quality awards consider factors, which represent human side in this study, such as leadership, customer focus, employee involvement, training and education, supplier relation, and reward and recognition as critical success factors for the implementation of total quality management and organizational performance.

Based on the message of quality "the quality is every one", Wilkinson (1992) emphasized on the human factors of quality management. He divided quality management into two aspects, soft and hard aspect, which interested on human side of quality management and work process respectively. He claimed that the hard aspect (technical side) may involve the arrangement of production techniques, including statistical process control, quality function deployment, changes in the layout, design procedures of the organization, and just-in-time inventory, while human side concerns with creating customer awareness within an organization and as such, may be seen as a form of internal marketing or employee communication.

According to Louise (1996), the culture change is a major reason for the reorientation of total quality towards the human factors of quality management. The culture change becomes as a stumbling block into many companies involve total quality management implementation (Develines and Partners, 1989; Kearney, 1991 and Louise, 1996). Lau and Idris (2001) suggested that it is necessary to study the critical soft factors (human factors) of quality management due to their importance to total quality management implementations to contribute in change the thinking of managers and employees and permeating of total quality management throughout the whole organization. Yasuo (1980) said "To make good use of personnel is difficult,

but it is an issue that is required and must be overcome". According to Tamimi and Sebastianelli (1998), 48 per cent identified barriers to total quality management due to human factors of quality.

Recently, researchers pay more emphasis on the dimension of human factors of quality management, and their influences and relations with the hard factors and organizational performance (See Table 2.4.) (e.g. Gadenne and Sharma, 2009; Fotopoulos and Psomas, 2009; Abdullah et al., 2008; Lewis et al., a, b 2006; Rahman and Bullock, 2005; Boon and Arumugam, 2005; Sila and Ebrahimour, 2002; Lau and Idris, 2001; Louise, 1996; Motwani et al., 1994; Wilkinson, 1992; Hill, 1991).

Controversial claims have been suggested by researches regarding the most effective factors on total quality management implementation; for example, Black and Porter (1995) claimed that hard factors concern with tools and systems that lend to support the implementation of human factors, while Samson and Terziovski (1999) found that human factors of quality management such as executive commitment, employee empowerment and an open culture can make competitive advantage stronger than the technical factors such as process improvement, benchmarking, and information and analysis.

Wilkinson (1992) suggested that the whole total quality management process will be much enhanced of these issues were brought to the fore, adding takes such as the breaking down of department barriers and increasing employee involvement. Thus, it is difficult for quality tools to contribute in quality improvement, customer satisfaction, and consolidation of its market position without support and guidance by the human factors of quality management such as top management commitment and employee and supplier support (Fotopoulos and Psomas, 2009).

Lewis et al. (2006) found that hard criteria implementation has more attention than soft criteria (human factors) in small and medium enterprise. He defined the human factors of quality management which are largely related to the behavioural aspects of working life such as leadership, human resource management, supplier's relations and customer focus. Hill (1991) also suggested

that there are lacunae in the implementation of social factors when the organizations reengineering their system and procedure.

Lau and Idris (2001) found that human factors such as culture and trust and teamwork have a strong influence on quality management. The importance of human factors of quality based on their important role on the implementation of total quality management; as a program needs great and continuous changing in the culture of organization. Motwani et al. (1994) considered the human factors of quality management such as leadership, organizational skills and culture as a key player that act to achieve quality performance.

It is easily to quantify the hard criteria (Lewis, 2006 a; Oakland, 2000; and Louise, 1996), while the soft criteria are more open to interpretation; thus, it is more difficult to measure (Lewis, 2006 b; Gotzamani and Tsiotras, 2001; Samson and terziovski, 1999).

More specifically, Flynn et al. (1995) attempted to explore and investigate the relationship between quality management practices and their impact on the performance and competitive advantage. They divided quality management practices into two groups; the first group named as the core quality management practices, and includes: process flow management, product design process and statistical and control/feedback. The second group named as the quality management infrastructure practices (human factors), which includes: customer relationship, supplier relationship, work attitudes, workforce management, and top management support.

They found a positive relationship between quality management practices and performance; which both technical and human factors are significantly impact organization performance. They also found that the core quality management practices act as a mediator factor for the relationship between the human factors of quality management and the organization performance. In other words, human factors of quality management indirectly impact organization performance through their direct impact on core quality management practices or technical factors. This finding supports the purpose of the present study.

Furthermore, Ho et al. (2001) divided the eight factors of quality management that were developed by Flynn at el. (1994) into two groups; namely the core quality management factors and the quality management infrastructure factors. They found a positive impact of quality management infrastructure factors on the core quality management factors. Besides, it was found another indirect impact of the quality management infrastructure factors on the organization performance through their impact on the core quality management factors.

Lewis et al. (2006) identified 13 soft factors (human factors) (they are shown in Table 2.5) and 12 hard factors as critical factors of quality management based on Sila and Ebrahimour (2002) study, who identified 25 criteria factors of quality management. Actually, Sila and Ebrahimour (2002) made a huge study to investigate total quality management practices based on the survey studies that conducted between 1989 and 2000 in different countries and published in different journals within that period. In fact, Sila and Ebrahimour (2002) found out in their survey four out of seven practices received the highest coverage that are related to the human side of total quality management they are; customer focus and satisfaction, teamwork, training, and employee involvement.

Rahman and Bullock (2005) and Abdullah et al. (2008) suggested that the hard factors of quality management need the support of human factors of quality management to have a significant impact on organization performance. Not that only, but also they provided evidence that human factors of quality management support the hard factors to give impact on organization performance.

Practically, Rahman and Bullock (2005) found a significant relationship between the human factors of quality management (such as workforce commitment, shared vision, customer focus, use of team, personnel training, and cooperative supplier relations), and the technical factors of quality management (e.g. use of JIT principles, technology utilization, and continuous

improvement enablers). They used six human factors of quality management as shown in Table 2.5.

Also, Abdullah et al. (2008) found a significant positive relationship between the human factors of quality management (e.g. management commitment, employee involvement, training and education, and reward and recognition) and quality improvement and organizational performance. The six human factors that used in this study are shown in Table 2.5.

Recently, Gadenne and Sharma (2009) suggested that the overall performance is favourably influenced by the hard factors (e.g. benchmarking and quality measurement, continuous improvement, and efficiency improvement), the soft factors (e.g. top management philosophy and supplier support, employee training and increased interaction with employee, and customer improve organizational performance), and also other factors such as customer focus and training contributed to customer satisfaction.

Human factors of quality management are summarized in Table 2.5

Table 2.5: The human factors of quality management

Authors	Period	Human factors
Seraph et al.	**1989**	1- Top management leadership 2- Role of quality department 3- Training 4- Supplier quality management 5- Employee relations
Flynn et al.	**1994**	1- Top management support 2- Process management 3- Workforce management 4- Supplier involvement 5- Customer involvement
Rahman and Bullock	**2005**	1- Workforce commitment. 2- Shared vision. 3- Customer focus. 4- Use of teams. 5- Personnel training. 6- Cooperative supplier relations.
Zhang	**2000**	1- Leadership 2- Supplier quality management 3- Employee participation 4- Recognition and reward 5- Education and training 6- Customer focus

Table 2.5: continued…

Authors	Period	Human factors
Lewis et al.	**2006**	1- Customer focus and satisfaction. 2- People training. 3- Top management commitment. 4- Teamwork. 5- Employee involvement. 6- Supplier management. 7- Communication. 8- Reward and recognition. 9- Human resource management. 10- Employee empowerment. 11- Quality culture. 12- Employee satisfaction. 13- Social responsibility.
Abdullah et al.	**2008**	1- Management commitment. 2- Customer focus. 3- Employee involvement. 4- Training and education. 5- Reward and recognition. 6- Supplier relationship
Gedenne and Sharma	**2009**	1- Top management support 2- Supplier support 3- Customer involvement 4- Employee involvement 5- Employee training

From all what have been discussed above and based on the work that has been done by total quality management gurus such as Deming, Grosby, Juran, Feigenbaum, and Ishikawa, in addition to the previous studies that interested on identifying the critical factors of the total quality management implementation (e.g. Oprime et al., 2012; Guion, 2010; Wahid and Corner, 2009; Fotopoulos et al., 2009; Sharma and Kodali, 2008; Antony et al., 2002; Zhang, 2000; Yusof and Aspinwall, 1998; Quazi et al., 1998; Black and Porter, 1996; Tamimi and Gorshon, 1995; Badri et al., 1995; Flynn et al., 1994; Porter and Parker, 1993; Saraph et al., 1989), and the studies that concentrated on the human side of total quality management (e.g. Gadenne and Sharma, 2009; Fotopoulos and Psomas, 2009; Kumar et al., 2009; Abdullah et al., 2008; Tari, 2007; Demirbag et al., 2006; Rahman and Bullock, 2005; Louise, 1996; Flynn et al., 1995; Wilkinson, 1992), the current study identifies six factors as human factors of quality management; they are: leadership, customer focus, supplier relation, employee involvement, training and education, and rewards and recognition. The identification of these six factors became as a result to examine both the direct impact of human factors of quality management on quality improvement practices and organization performance, and the indirect impact of human factors on organization performance through their impact on quality improvement practices.

The six human factors are shown in detail as follow:

Leadership

ISO 9001 defined leadership as a person or a group of people at the highest level, who direct and control the organization. Almost total quality management gurus consider the leadership or top management commitment as a key player in the implementation of total quality management. Total quality management requires leaders to motivate and inspire their employees beyond their self-interest and focus on the organization (Bass, 1997), which leadership and control from managers is essential to success the improvement process (Savolainen, 2000 and Boaden, 1997).

Deming (1986) considered leadership as the responsible to drive the changing in processes and systems, and the leadership also responsible to put clear standards of acceptable work to employees, and to create an appropriate environment, and provide methods to complete quality aims. According to Reed et al. (2000), "embedded in the process of total quality management is the need for commitment to the strategy by top management". Allen et al. (2007) found that during periods of organizational change, communication of information from leadership to management in order to express practical information to employees creates a clearer understanding and increases trust within the organization.

Leadership is defined in the context of total quality management as the key of providing and driving the vision (Mittal, 1999). Crosby (1979) considered change the thinking of top management is the key to quality improvement. .According to Juran (1989) those firms that have succeeded in making total quality work for them have been able to do so because of a strong leadership. Alongside, total quality management awards identified the leadership as an important criterion for the successful of total quality management implementation. Leaders in top management need to set directions and create a customer orientation, clear and visible values, and high expectations (Baldrige, 1999).

Top management commitment has been well-supported theoretically and empirically. Many researchers identified the leadership as a critical success factor for total quality management implementation such as Sharma and Kodali (2008), Tari et al. (2007), Lewis et al. (2006), Conca et al. (2004), Rahman (2002), Antony et al. (2002), Yusof and Aspinwall (1999), Joseph et al. (1999), Tamimi (1998), Ahire et al. (1996), Flynn et al. (1994), Saraph et al. (1989), Dale and Duncalf (1985).

Other studies emphasized on the relationship between human factors of quality management and quality improvement and organization performance such as Flynn et al. (1995), Abdullah et al. (2008), and Gadenne and Sharma (2009). They identified leadership as one of the success human factors of quality management which have a significant impact on quality improvement implementation and organizational performance.

Garvin (1986) reported that high product quality don not exist without strong top management commitment and the high levels of quality performance, which were always accompanied by organizational commitment to the goal. On the other hand, Ebrahimpour and Lee (1988) found that top management support for total quality management is the key factor in the implementation of quality improvement.

According to Flynn et al. (1995) top management support is a critical success factor for all quality management practices, which includes both core quality management and infrastructure quality management practices. They considered both sides of quality management either core or infrastructure would be ineffective to the implementation of quality management without strong top management support.

Al-Tarawneh (2010) claimed that the leadership is an important player that strongly impacts the implementations of total quality management from different ways. He suggested that leadership has to lead the successful of total quality management implementations through establishing or revising recognition and reward system. Furthermore, leadership must take care about customer requirements and supplier relations and must concern about the role of

employees to the success of total quality management implementations as well, in addition to the role of communication to create awareness of total quality management program.

The leadership must make a suitable environment to provide the comfort to the employee in order to improve performance and productivity of the organization (Leiter et al., 2002). According to Crawford and Lok (2004), Employee's satisfaction and commitment depends on innovative and supportive cultures that are supported by their leaders.

Rao et al. (2004) reported that management commitment to the total quality management philosophy is the major contributor to the success of any quality initiative. However, according to Schmidt and Finnigan (1992), there are some dimensions of the behaviour are related to the work of leadership, which considered these behaviours as successful factors for quality leaders' demonstration. These dimensions are;

1. Giving priority attention to the needs of external and internal customers.
2. They empower rather than control.
3. They emphasize improvement rather than Maintenance.
4. They emphasize prevention rather than correction.
5. They encourage collaboration rather than competition.
6. They train and coach, rather than direct and supervise.
7. They learn from problems.
8. They continually try to improve communications.
9. They continually demonstrate their commitment to quality.
10. They establish organizational systems to support the quality effort.
11. They encourage and recognize team effort.

Customer Focus

In reality, most of the organization effort and practices emphasizes on customer satisfaction. Literature of total quality management that was built by quality gurus and contributed by both quality awards and the other empirical studies that made by the researchers who interest on total quality management approach such as Lewis et al. (2006), Conca et al. (2004), Rahman (2002) Antony et al. (2002), Yusof and Aspinwall (1999), Joseph et al. (1999), Saraph et al. (1989), Flynn et al. (1994), Black and Porter (1996), Ahire et al. (1996), Lewise et al. (2006), Rahman and Bullock (2004), Abdullah et al. (2008), Tari et al. (2007), Gadenne and Sharma (2009). They generally, considered the customer satisfaction as a main objective for all total quality management practices. In point of fact, the customer in quality management philosophy is considered as a central aim, which all practices and activities of organization act to explore and achieve the customer requirements.

Different definitions from scholars in total quality management field defined quality as a philosophy to investigate customer satisfaction. According to Feigenbaum (1991), quality is a customer determination, not an engineer's, a marketing department's or a general management's determination. He suggested that quality chain starts with identification of all customer requirements and ends when product or service is delivered to the customer in full time.

Sashkin and Kiser (1991) claimed that total quality management means that the organization's culture is defined by and supports the constant achievement of customer satisfaction through an integrated system of tools, techniques and training. Taguchi (1986) however, stated that quality products should meet the needs and expectations of the customers at the minimum loss during the life of the product. Deming (1986) has emphasized on the importance of measurement of customer requirement. He considered the customer as the king of quality. In fact, meeting customers' requirements is the way to quality, towards competitiveness, and thereby to success (Oakland, 2000).

An essential core value in total quality management philosophy is that all products and processes recognize the requirement of customer. Li Riley et al. (2006) considered customer satisfaction as an important construct and one of the major objectives of organizations; while, Juran and Gryna (1993) considered the understanding of customer requirements as an important effort is made by organization to ensure that quality design meets customer requirements and needs.

Therefore, involvement of the customer in the process of product design becomes an important practice to understand and achieve customer requirements. Organizations realized that the key to success in the competitive marketplace is to serve the requirements of the customer better than their competitors.

According to Dahlgaare and Park (2006), total quality management is a philosophy that works as a company culture characterize by increment customer satisfaction through continuous improvement, where all employees actively contribute. Milakovich (1991) pointed out that the overall performance of an organization will be increased through an effective total quality management, which includes a total organizational approach for meeting customer needs and expectations, which involve all managers and employees, to continuously improve the processes, products and services of the organization. In general, the organization must look at its customers first in order to determine what it needs to do, such as using customer feedback in designing new products, monitoring customer satisfaction levels, responding to customer complaints and evaluating its success at doing it (Band, 1991; Peters, 1988; Schonberger, 1994).

Flynn et al. (1994) considered the relationship with the customers as an important practice of quality management in order to explore their needs since the relationship with the customer is a key to quality management in order to fully determine the customer needs, as well as to receive a feedback on the extent which of those needs is being met.

Alongside, Customer focus plays as critical success factors for total quality management implementation and has a significant impact on the implementation of quality improvement practices and organizational performance (Flynn et al., 1995; Rahman and Bullock, 2004; Abdullah et al., 2008; Gadenne and Sharma, 2009).

Satisfying customers' requirements better than the competitors is widely recognized today as a key to success in the marketplace (Thiagarajan and Zairi, 1997). Flynn et al. (1995) determined the impact of customer relationship in three ways;

First, by improving initial design quality, a strong relationship with the customer will improve quality performance by reducing the number of engineering change orders after the design has reached production; thereby, reducing manufacturing process variability,

Second, establishing strong links with the customer would be useful in the development of manufacturing design; allowing the customers to determine the critical specification and tolerances from their own perspectives,

Third, customer interaction is likely to lead to design new product features, which better meet the customer's needs and satisfy them.

Supplier Relations

Literature of quality management considers the relationship with supplier is a strong contribution to the implementation of total quality management (Lamming, 1993). According to Dyer and Ouchi (1993), organizations have begun to recognize that there are strong competitive advantages and performance improvements to be gained from developing cooperative relationships with suppliers. In fact, changing the relationship with suppliers is an important aspect of the overall change brought about by a total quality management approach.

International Standardization Organization (ISO) (2000) extended the philosophy of total quality management to suppliers out of the company, which ensure that they engage in the same quality practices. ISO required a system for suppliers to be identified, selected, communicated with and evaluated; besides, suppliers must be chosen and evaluated in relation to the criteria that must be established. Furthermore, ISO (1997) claimed that organization and its suppliers are interdependent, and such a mutually beneficially relationship enhances the ability of both organization and suppliers to create value. Deming (1982) claimed that establishing long-term supplier relationships and limiting the number of supplier used by company is based on their adherence to quality standards. The Malcolm Baldrige Quality Award (1995) is also interested on the importance of supplier quality.

Leonard and Sasser (1982) considered supply function as an important dimension of total quality management due to the need of material and purchased parts, which sometime make problem to total quality management activities. Actually, organizations consider their suppliers as one element of the product design processes. Dale and Lioyd (1994) presented a description of what they call. "Supply chain management". The concept was defined as a situation of 'working together towards a common goal'. It leads to benefit through cooperation, rather than pursuing self-interest. Typically supplier relationship will lead to

1. Long-term contracts based on: common aims, particularly to continuously improve the product or service, shared desire to work together, mutual trust, cooperation, honesty, and open declaration of problems.

2. Willingness between both parties to learn more about each other. This may involve members of suppliers' and clients' organizations working at other offices or sites.

3. A constant interchange of information, including all financial matters.

4. Cooperation on the design and methods of production at the earliest opportunity.

5. Joint problem solving to achieve best practice.

6. A reduction in the size of the supplier base.

Juran and Grena (1993) considered the poor quality of supplier products reflect as extra costs for customer. Long-term relationship with supplier led to improvement in quality process performance and continuously cost reduction (Newman, 1988). The materials input that come from supplier must meet the requirements and standards of quality (Tari et al., 2007).

Flynn et al. (1995) said "the selection of supplier is based on quality consideration rather than cost". They claimed that the supplier can contribute to quality performance through many ways. The key to examine their contribution is the selection of a small number of suppliers and start to establish a long-term relationship with them. And also, the selection of supplier based on quality consideration, rather than cost, encourages the provision of high quality parts. In contrast, supplier selection through the competitive bidding process has no incentive to improve quality once a contract has been awarded.

Employee Involvement

Throughout the extensive literature of quality management, it has been found that employees are at the centre of organizational change, towards success of total quality management implementation (e.g. Ooi, et al., 2007; Seraphim, 2006; Armstrong, 2006; Ehigie and McAndrew, 2005; Zhang, 2000; Palo and Padhi, 2005; Sila, 2005). Actually total quality management strategy relies on comprehensive involvement from the whole organizational members (Andersen and Savie, 2004).

As a message of total quality management "the quality is everyone", the quality philosophy considers all the employees of organization are responsible to achieve the aims of total quality management. Kanji (1990) defined total quality management as “to obtain total quality by involving everyone’s daily commitment”. Richardson (1997) defined employee involvement as a process acting to make decisions and solve problems appropriately in the organizations.

According to Zhang (2000), Employee participation can be defined as the degree to which employees in a firm engage in various quality management activities. Employee involvement relates to the participation of employees in problem solving and decision making at all levels in the organization (Oliver, 1988). Moreover, Oliver claimed that Involvement means to empower employees, to give them information, to increase their knowledge and to reward their quality performance.

Ishikawa (1986) advocated employee involvement as the key to the successful implementation of total quality management. Participation is decisive in inspiring action on quality management (Juran and Gryna, 1993). Ahire et al. (1996) identified employee involvement as one of the critical successful factors for total quality management implementation. Dwyer (2002) concluded that the employee involvement issues must be addressed in any quality management initiative.

Seraphim (2006) suggested that total quality management theory is based on the ability of organization to use commitment, participation and involvement of all employees in order to improve continually. Thus, due to the important role of employees in the implementation of total quality management, organizations act to enhance the responsibility of employees to involve them in the decision making and put the achieving of quality aims in hand of employees. This empowered employees and encouraged them to fix their own working problems (Deming, 1986).

In fact, Employee involvement is exemplified by things such as teamwork, employee suggestions, and employee commitment (Zhang, 2000). A significant characteristic of employee involvement is teamwork, which aims to improve the input and the output of any stage. Teamwork is deeply needed throughout the organization; it can compensate one's strength for another's weakness (Deming, 1986). Furthermore, according to Zhang (2000), Group work and group decision-making offer several advantages over individual effort. If several knowledgeable people are brought into the decision-making process, a number of worthwhile possibilities may be uncovered, making synergy a possible benefit.

Moreover, Mitchell (1979) suggested that by achieving effective employee involvement, employees will be capable to committee to their jobs since job commitment can be defined in terms of one's loyalty, identification, and involvement with the firm. According to Lam (1995), if employees are committed to their jobs, they will be motivated to spend more energy on providing high process, product, and service quality to satisfy the firm's customers.

Generally, employee involvement is an essential factor of total quality management implementation. Employee involvement can contribute to the business of the organization through a greater involvement of all employees in problem-solving, decision-making, and the financial success of the firm.

Training and Education

Training and education had more attention in quality management approach that was made by quality leaders and other scholars due to their important role to the improvement of employee abilities to achieve the aims of quality management program.

The father of total quality management, Deming (1986), considered training and education as an important process in the organization to continual updating and improvement. He stressed the importance of this factor in his famous 14 points for the implementation of total quality management as mentioned earlier. Furthermore, Juran and Gryna (1993) claimed that training and education are a failure if they do not result in a change in the employees' behaviour and the organization must understand that training and education are essential part of the quality improvement program.

Many results of empirical studies, which interest on total quality management approach, identified training and education as one of the most critical successful factors for the implementations of total quality management program, e.g. Saraph et al. (1989); Oakland (2000); Porter and Parker (1993); Yusof and Aspinwall (1999); Ahire et al. (1996); Zhang et al. (2000); Lewis et al. (2006); Rahman and Bullock (2004); Abdullah et al. (2008); Conca et al. (2004); Tari et al. (2007); and Gadenne and Sharma (2009).

Ahire et al. (1996) suggested that employee involvement and empowerment cannot be succeeding without a formal systematic training in quality management. Oakland (2000) claimed that due to the importance of training and education for total quality management implementations, training and education should be considered as a significant principle to total quality management policies and practices. Moreover, Zhang et al. (2000) suggested that organizations have understood the importance of training and education as an integral part of total quality management implementation. Goetsch and Davis (1997) suggested that it is important to employee to be updated constantly due to the rapid changing in the organizational environment, in which the business requirements might be changed rapidly.

Crosby (1979), in his approach that emphasizes on prevention rather than after-the-event inspection, doing things right the first time, and zero defects, claimed that mistakes are caused for two reasons: Lack of knowledge and lack of attention. Moreover, he suggested that training and education of employee can remove the first reason; and a personal commitment to excellence (zero

defects) and attention to detail will treat the second reason. Feigenbaum (1991) confirmed that the effectiveness of employee training and education should focus on the following three main aspects: Quality attitudes, quality knowledge, and quality skills.

Ishikawa (1986) supposed that quality begins and ends with education. He has been associated with the development and advocacy of universal education in the seven quality control tools. These seven tools are listed below:

- Pareto chart;
- Cause and effect diagram (Ishikawa diagram);
- Stratification chart;
- Scatter diagram;
- Check sheet;
- Histogram;
- Control chart.

In general, to ensure that all employees are generally aware and understand all of quality management concepts, skills, competencies, and attitudes are appropriate to the continuous improvement philosophy. Thus, all employees of an organization should be provided with the right level and standard of training and education. International Standardization Organization (ISO) 9000 requires the company to ensure that the people are trained to undertake the tasks to which they are assigned.

Reward and Recognition

Reward and recognition is one of the important practices in the organization, which literature of quality management considered them as an important practice for total quality management program (Deming, 1986; Crosby, 1979; Juran et al., 1993; Ishikawa, 1985; Feigenbaum, 1991; and Oakland, 2000).

However, Crosby (1986) claimed that reward and recognition is one of the most important principles and practices for the successful of total quality management implementation. According to Juran and Gryna (1993), reward and recognition is the public acknowledgement of superior performance of specific activities and it is defined as benefits, which are conferred for generally superior performance with respect to goals of the organization. They also claimed that reward and recognition can be given in different ways by salary increment, bonuses, and promotion.

Zhang et al. (2000) suggested that reward and recognition acts to improve and effect employee commitment to quality improvement program. Moreover, he claimed that organizations should establishment a serious of reward and recognition program. He suggested the following:

First, the reward and recognition must be consistent with organizational values and objectives; because if individual or team efforts cannot contribute to the realization of the overall organizational objectives that means they cannot be rewarded and recognized. Therefore, objectives of individuals or teams need to be continuously reviewed and updated.

Second, criteria should be objective and measurable; because it is not easy to make sure that the reward and recognition can be performed fairly.

Third, the reward and recognition should be significant and fit the organizational culture or else, it is useless.

Fourth, the program should be approved by the workers' congress.

Fifth, once the program is approved, it should be strictly implemented; otherwise, reward and recognition activities cannot effectively stimulate employee commitment, enthusiasm, and creativity.

Finally, reward and recognition can be provided at several levels: Individual, team, department, or business unit.

Hill (1991) supposed that a system of reward and recognition is required to get people to take total quality management program seriously and it should includes pay, promotion, discipline and all the weapons at management's disposal rather than a mere 'propaganda and trinkets'. Giles and Williams (1991) considered reward and recognition system as a key process to achieve strategic changes towards success of total quality management implementation.

Furthermore, Walker (1992) claimed that after few years, the implementation of total quality management will regularly fail because the employees will lose interest in the prizes, the recognition, and because of their expectations of a financial reward due to their contribution to the quality improvements. This view leads organization to search seriously in order to find out new methods to enhance reward and recognition system.

Moreover, Dale and Plunkett (1990) maintained that the features of any quality management program are viewed due to recognition for improved performance by any individual, section, and department within the organization. Bowen and Lawler (1992) argued that the trend is moving towards a group-oriented recognition aiming to support the team, as well as a skill based reward targeting an increment in individual skills' rate. Actually, Deming argued, that the individual reward and individual control will actually undermine the kind of employees behaviour, which was intended to contribute to continuous improvement.

Many other researchers, who attempted to identify the critical factors of quality management, have also identified reward and recognition as an important critical successful factor for total quality management implementation (Zhang et al, 2000; Lewise et al., 2006; Abdullah et al., 2008). They also clearly recommended that it is an important to focus on employees' recognition and reward systems to encourage greater employee participation toward investigate the objectives of total quality management program.

2.5 Organization performance understanding and measurement

The purpose of this study is to obtain the impact of total quality management practices on organization performance in Yemeni industrial companies through examine direct and indirect impact of human side of quality management on quality improvement practices and organization performance.

In general, performance indicates to the level into which an organization realizes its objectives. In research today, especially in total quality management field, organization performance is always used as a dependent variable to assess the input and the output of quality. Furthermore, there is variety of approaches were established to evaluate organizational performance.

In fact, the literature reveals that there are a number of dimensions of organizational performance, where some studies used financial, internal process, employee and customer dimensions. While traditionally, organization performance is measured by financial indicators such as profit, market share, earning, and growth rate. Actually, it is clear that there is no one single measurement for organization performance; whereas, the previous studies have measured organization performance from different ways; terms of type of sector, type of industry, culture context, and also size of the organization. Table 2.7 shows some measurements of organization performance from quality improvement studies.

After different organization performance measures had been evaluated, it was decided that the instrument that was adopted by Samson and Terziovski (1999) and developed by Rahman and Buluk (2005) would be adopted in this study. This instrument includes seven dimensions of organization performance they are; customer satisfaction, employee morale, productivity, defects, delivery in full, cost of quality as a percentage of total sales, and warranty claims cost as percentage of total sales.

This instrument was developed by committee of academics, managers, and chairman of the Australian Quality Awards Foundation by using variety of sources such as the Malcolm Baldrige National Quality awards criteria (1994),

the Deming Prize award criteria, the European Quality Award criteria, and the Australian quality award criteria (1994).

Bourne et al. (2000) claimed that the appropriate performance measurement is supposed to support formulation of company strategy, management of business processes and change, communication, resource allocation, employee motivation, and long-term success. In fact, the factors that included in this instrument are important to organization performance.

According to Hackman and Wageman (1995), total quality management leaders share the vision that an organization's primary purpose is to stay in business; thus, that can promote the stability of the community, generate products and services, which are useful to customers, and provide a setting for the satisfaction and growth of organization members.

Therefore, based on this view, all seven dimensions that included in this study to measure organization performance are important factors in business effectiveness. In other words, those seven dimensions can lead the success of organization performance and reveal the competitive capability of the organization in the marketplace.

Indeed, choosing a measurement for organization performance depends on the purpose of study; if for example, the aim of the study is to investigate total quality management implementation, factors such as customer satisfaction, employee satisfaction, productivity and quality of output and delivery performance must be included. Literature of quality management considered these factors as the most important factors for a manufacturing organization to be successful in the world market (Gadenne aand Sharma, 2009; Rahman and Bullock, 2005; Zhang, 2000; Samson and Terziovski, 1999; Dean and Bowen, (1994); Fornell, 1992).

Table 2.6 are summarized measures of organization performance

Table 2: measures of organization performance

Researcher	Measures of company performance
Ebrahimpour and Joohnson (1992)	Operational and financial performance
Adam (1994)	Return on investment
Maani et al. (1997)	Business performance
Adam et al. (1997)	Financial performance
Anderson et al. (1995)	Customer fulfilment
Flynn et al. (1995)	Quality perceived in the market. Rate of defectiveness.
Ahire et al. (1996)	Reliability, performance, durability and conformance to specification.
Foker et al. (1996)	Rate defectives
Ittner and Larcker (1997)	Return on assets and return on sales
Powell (1995)	Competitive advantage
Samson and Terziovski (1999)	Customer satisfaction, Employee moral, productivity, defects as a percentage of production volume, delivery in full on time to customer, warranty claims cost as percentage of total sales, cost of quality as a percentage of total sales.

Continued... Table 2.7

Researcher	Measures of company performance
Dow et al. (1999)	Finished product defect rate relative to major competitors, defect as a percentage of production volume, warranty claims cost as percentage of total sales, cost of quality as a percentage of total sales
Zhang (2000)	Employee satisfaction, product quality, customer satisfaction, and strategic business performance
Agus (2005)	Revenue growth, sales growth, market share, profits, high demand, product turnover and efficiency

2.6 Human factors and organization performance

Extensive literature of quality management discussed the relationship between total quality management practices and organization performance. They indicated strong and positive results (e.g. Valmohammadi, 2011; Gadenne and Sharma, 2009; Fotopoulos and Psomas, 2009; Kumar et al., 2009; Abdullah et al., 2008; Joiner, 2007; Tari, 2007; Demirbag et al., 2006; Rahman and Bullock, 2005; Prajogo and Sohal, 2003; Ahire et al., 1996; Louise, 1996; Dow et al., 1999; Powell, 1995; Flynn et al., 1994; Adam, 1994).

Flynn et al. (1995) suggested that there is a significant relationship between total quality management practices and organization performance. They divided total quality management practices into core quality management practices and quality management infrastructure. Core quality management practices present

technical practices while quality management infrastructure presents human factors of quality management.

They investigated the direct impact of quality management infrastructure on core quality management and organization performance, and indirect impact of quality management infrastructure on organization performance through their direct impact on core quality management. They found that infrastructure quality management directly impacts both core quality management and organization performance, and also infrastructure quality management indirectly impacts organization performance via direct impact on core quality management practices.

In fact, human factors of quality management act to create a suitable environment to implement technical aspect of quality management, which means that the human factors of quality management influence the implementation of technical factors of quality management. On the other hand, the human factors of quality management also impact organization performance in the same way that traditional human resource management impacts organization performance (Ahir et al., 1996).

Ahire's suggestion also claimed that the human factors of quality management directly impact organization performance. Moreover, human factors of quality management indirectly impact organization performance through their impact on technical factors of quality management.

Rahman and Bullock (2006) investigated the relationship between soft and hard factors of quality management and their direct and indirect impact on organization performance. They found a positive relationship between soft and hard factors of quality management and organization performance. They confirmed that soft factors of quality management directly impact hard factors and organization performance, and also hard factors of quality management directly impact organization performance. Moreover, they found an indirect relationship between soft factors and organization performance, whereas soft factors of quality management indirectly impact organization performance through their direct impact on hard factors of quality management.

Abdullah et al. (2008) suggested that the effective implementation of soft factors of quality management in the organization plays a central role for quality improvement implementation, which in turn improve performance and productivity. They examined the direct and indirect relationship of soft factors of quality management on organization performance; they found direct positive effect of soft factors on organization performance, and they also found indirect effect of soft factors of quality management on organization performance through their direct effect on quality improvement.

Gadenne and Sharma (2009) suggested that the favourable relationship between hard and soft factors of quality management improves organizational performance. They found that the hard factors of quality management such as benchmarking and quality measurement, continuous improvement, and efficiency improvement from one hand, and the soft factors of quality management such as top management philosophy, supplier support, employee training and increased interaction with employee and customer from the other hand significantly influence organization performance.

Moreover, Demirbag et al. (2006) measured the effect of total quality management practices on organizational performance in SMEs in Textile Industry of Turkish. They found a strong positive effect of total quality management practices on non-financial performance, and a weak effect of total quality management practices on financial performance.

Brah and Tee (2002) found that their study supports the proposition that the implementation of total quality management correlates with quality performance. They investigated the relationship between total quality management and performance of Singapore companies. They suggested that total quality management practices such as role of top management leadership and commitment, customer focus, people management focus, quality focus, as well as total quality management tools and techniques contribute to the successful of total quality management implementation.

Alongside, Kumar et al. (2009) investigated the impact of total quality management implementations on Canadian organizational performance. They found a positive impact of employee relations, operating procedure, customer satisfaction, and financial result on organizational performance. Tari et al. (2007) identified the relationship between total quality management practices and their direct and indirect effect on organizational performance. They found a positive effect of total quality management practices on organizational performance.

Joiner (2007) investigated the relationship of total quality management practices through the moderating effect of co-worker support and organization support on the performance relationship. A questionnaire survey was carried out in a sample firms selected from the motor vehicle parts and accessories industry. He found a strong significant relationship between the implementation of total quality management and organization performance, whereas co-worker support and organization support moderated the relationship of total quality management implementation and organization performance.

Valmohammadi (2011) examined the impact of total quality management implementation on organization performance in Iranian manufacturing SMEs. He used a questionnaire survey. The questionnaire was distributed to quality managers of 68 Iranian manufacturing SMEs. The results found out a significant relationship between total quality management practices and organization performance, in which leadership plays an important role in enhancing the Iranian organizational performance.

Samson and Treziovsk (1999) found that total quality management practices such as leadership, management of people, and customer focus have a significant relationship with organization performance, and the behavioural factors such as executive commitment, employee empowerment, and open culture contribute competitive advantage more than hard factors such as process improvement, benchmarking, and information and analysis.

Moreover, Dow et al. (1999) found a positive relationship between human factors of quality management such as employee commitment, shared vision

and customer focus, and organizational performance. Also, they found that hard factors of quality management such as benchmarking, cellular work team, advanced manufacturing technology, and close supplier relations do not contribute to superior performance.

Briefly, human factors of quality management directly contribute to organization performance, and also indirectly contribute through their direct effect on the implementation of total quality management; whereas, these factors lead to create a suitable environment to the implementation of technical factors of quality improvement.

2.7 Quality improvement philosophy

Through an extensive literature of total quality management, it was found that the theory of quality improvement has been developed based on the contribution of total quality management leaders such as Deming, Juran, Crosby, Feigenbaum, and Ishikawa, and also based on the quality awards model, as well as measurement studies (such as Saraph et al., 1989; Flynn et al., 1994; Porter and Parker, 1993; Anderson et al., 1995; Samson and Treziovsk, 1999; and Zhang, 2000).

As mentioned earlier, total quality management gurus provided certain ideas, propositions, philosophies, and principles concerning quality management and quality improvement philosophy. In relation of this study, researcher considers the approaches of total quality management in terms of what is related to the purpose of this study. The following will discuss the management role in the implementation of total quality management and the role of quality improvement to investigate customer satisfaction, and also employee managing or human resource management and supplier relations as well.

Deming in his approach defined the problem of management from statistician's perspective (Saraph et al., 1989). Deming (1982, 1986) focused on creating an organizational system, which adopts cooperation and learning, to

facilitate the implementation of processes management practices and to enhance customer satisfaction and firm's survival through continues improvement of processes, product and service, and employee fulfilment (Anderson et al., 1995).

Deming put 14 points as principles acting to improve quality management with statistical methods. Many researchers in domain of quality management used Deming 14 points to enhance their studies and identify critical success factors for total quality management implementations. The 14 points (Deming 1986) are listed as follow:-

1. Create constancy of purpose toward improvement of product and service,
2. Adopt the new philosophy,
3. Cease dependence on mass inspection,
4. End the practice of awarding business on price tag alone,
5. Improve constantly and forever the system of production and service,
6. Institute modern methods of training on the job,
7. Institute modern methods of supervision and leadership,
8. Drive out fear,
9. Break down barriers between departments,
10. Eliminate numerical goals for the work force,
11. Eliminate work standards and numerical quotas,
12. Remove barriers to pride of workmanship,
13. Institute a vigorous program of education and self-improvement, and
14. Put everybody in the company to work to accomplish the transformation.

Deming prescribed the importance of top management to quality, process design, and control. He gave emphasis to the effective of communication between managers and employees and created modern methods of training and education. Also, Deming prescribed the removal to employees' involvement and teamwork.

Juran (1993) in his approach considered the quality problems due to management rather than workers. He considered achieving of quality needs

effective of all activities in all organization functions. According to Zhang (2000), Juran's approach emphasizes on team and project work, which perform to more quality improvement, improve communication between management and employees and enhance the relations between employees. Juran identified the top management commitment, empowerment, employees' involvement, and recognitions and rewards as important activities for quality management implementations. The importance of customer requirements are essential in Juran's approach, he considered the understanding of customer requirements is very important to ensure design quality that meet customer needs through the use of techniques including quality deployment, experimental design, reliability engineering, and concurrent engineering.

On the other hand, Crosby (1979) created some principles to enhance the effort of quality improvement, these principles became as a map to researchers and managers in order to identify the critical success factors of total quality management implementations. Crosby suggested 14-steb program they are listed as follows:-

1. Management commitment.
2. Quality improvement team.
3. Quality measurement.
4. Cost of quality.
5. Quality awareness.
6. Corrective action.
7. Zero defects.
8. Training.
9. Zero defects day.
10. Goal setting.
11. Error causes removal.
12. Recognition.
13. Quality councils.
14. Do it over again.

On the whole, Total quality management leaders considered quality as an organizational system act to enhance the implementation of process management through cooperation and learning. They also suggested that all activities take action to achieve customer satisfaction which in turn ensure that the organization stays in business.

According to Kanji and Asher (1996), total quality management is a continuous process of improvement for individuals, groups, and whole organization; it includes a set of four principles (delight the customer, management by fact, people-based management, and continuous improvement) and eight critical concepts (customer satisfaction, internal customers are real (employee satisfaction), all work is process, measurement, teamwork, people make quality, continuous improvement cycle, and prevention).

The following section discusses the relationship of human factors of quality management and quality improvement practice that acts in this study as a mediator variable for the relationship of human factors and organization performance.

2.8 Human factors and quality improvement practices

Critical factors of quality management that support the effort of continuous improvement in organizations were identified by quality leaders and quality rewards models, and also by a lot of researchers, who interested on the field of quality management, (such as Oprime et al., 2012; Guion, 2010; Wahid and Corner, 2009; Fotopoulos et al., 2009; Sharma and Kodali,2008; Antony et al., 2002; Zhang, 2000; Yusof and Aspinwall, 1998; Hesan et al., 1998; Black and Porter, 1996; Tamimi and Gorshon, 1995; Badri et al., 1995; Flynn et al., 1994; Porter and Parker, 1993).

Wilkinson (1992) divided quality improvement practices into two aspects; the soft aspect interests on human side of quality management and the hard aspect interests on work process. He claimed that the hard aspect (or technical side) may involve the arrangement of the production techniques including

statistical process control, quality function deployment, changes in the layout, design procedures of the organization, and just–in-time inventory, while the human side concerns with creating customer awareness within an organization and as such, may be seen as a form of internal marketing or employee communication.

Flynn et al. (1995) in their empirical study explored and investigated both of technical and human side of quality improvement practices and their impact on organization performance and competitive advantage. They divided quality improvement practices into two groups; first group named core quality management practices; it is interested on the technical side of quality improvement practices and includes: process flew management, product design, process and statistical, and control/feedback. Second group named quality management infrastructure practices and interested on human side of quality improvement practices such as customer relationship, supplier relationship, work attitudes, workforce management, and top management support.

Flynn et al. found a positive relationship between quality improvement practices and organization performance; whereas both core quality management practices and quality management infrastructure practices directly impact organization performance. Not that only, but they also found that core quality management practices act as a mediator factor for the relationship between quality management infrastructure practices and organization performance that support the purpose of this study, which claimed a positive direct and indirect impact of human factor of quality management on quality improvement practices and organizational performance.

In the current study both quality improvement practices, technical and human practices, such as top management support, teamwork, customer involvement, process control and improvement, product design, and quality system improvement play as mediator variables for the relationship of human factors of quality management and organizational performance.

In the same way, Ho et al. (2001) divided the eight factors of quality management that were developed by Flynn at el. (1994) into two groups; core quality management factors such as process flew management, product design, process and statistical, and control/feedback. And the second group was quality management infrastructure factors such as customer relationship, supplier relationship, work attitudes, workforce management, and top management support. They found a positive direct impact of quality management infrastructure factors on core quality management factors and organization performance, and also they found other indirect impact of quality management infrastructure factors on performance through their impact on core quality management factors.

Rahman and Bullock (2005) and Abdullah et al. (2008) suggested that the hard factors of quality management need the support of soft factors of quality management to have a significant impact on organizational performance. Rahman and Bullock (2005) provided evidence confirming that the soft factors of quality management support the hard factors to impact organization performance.

They found a significant relationship between soft factors of quality management (such as workforce commitment, shared vision, customer focus, use of team, personnel training, and cooperative supplier relations) and hard factors of quality management (such as the use of JIT principles, technology utilization, and continuous improvement enablers). Also, they found that both hard and soft factors of quality management directly impact organization performance and also soft factors indirectly impact organization performance through their direct impact on hard factors.

It is difficult to quality tools to contribute to quality improvement, customer satisfaction, and consolidation of its market position without support and guidance by human factors of quality management such as top management and employee and supplier support (Fotopoulos and Psomas, 2009).

Abdullah et al. (2008) also found a significant positive relationship between soft factors of quality management (such as management commitment, employee involvement, training and education, and reward and recognition) with quality improvement. While, Abdullah et al. (2008) found that quality improvement mediates the relationship between the soft factors and organizational performance. They examined the direct impact of critical soft factors on quality improvement, and the indirect impact of soft factors on organizational performance through their impact on quality improvement. In fact, these results support, in one way or another, the aims of the present study that examine the mediator role of quality improvement practices for the relationship of human factors of quality management and organization performance.

In short, Literature of quality management suggested that total quality management practices have a significant relationship with organization performance. Moreover, Literature of quality management considered the relationship between human side of quality management and quality improvement practices as important relations for the success of total quality management implementation. Moreover, the literature of quality management suggested that the human factors of quality management create a suitable environment to the implementation of total quality management practices.

Particularly, current study proposes that the human factors of quality management directly impact quality improvement practices, which in turn impact organizational performance. That indicates that quality improvement practices mediate the relationship of human factors of quality management and organization performance. In other words, human factors of quality management have direct and indirect impact on quality improvement practices and organizational performance.

2.9 Summary

From the whole literature that has been discussed in this chapter, it is clear that there is lack of studies emphasize on the human side of total quality management; while many studies were carried out to contribute the technical side of quality management. In fact, the lack of interest was due to the technical orientation of total quality management gurus, who built the approaches of total quality management philosophy and interested on the technical side rather than the human side.

Moreover, the literature of quality management suggested that when the companies reengineer their processes to implement total quality management program, they give more interest on the technical side of quality management rather than the human side.

Besides, the literature of quality management also suggested that the human factors of quality management (such as leadership, teamwork, employee involvement, training and education, customer focus, communication, supplier relations, social relations, and rewards and recognition) have a significant impact on organizational performance.

Indeed, insufficient empirical studies examined the impact of human side of quality management on quality improvement practices and organization performance; even though, they provided evidence showed a significant direct impact of human factors on quality improvement practices and organization performance, and indirect significant impact on organization performance through their impact on quality improvement practices.