



Does TQM influence employees' job satisfaction? An empirical case analysis

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Abstract

Purpose – This paper seeks to examine employees' perceptions of TQM practices and its impact on job satisfaction within a large Malaysian outsourced semiconductor assembly and test (OSAT) organization. Despite extensive research on TQM practices, none examines this scope of investigative study. Therefore, the proposed model was developed with the intention of examining this relationship.

Design/methodology/approach – Original research using self-completed questionnaires, distributed to all staff within this organization, is thoroughly reported. The study sample consisted of 230 employees, resulting in a response rate of 76.6 percent. A questionnaire developed by Wright and Cropanzano was used for ascertaining the level of overall job satisfaction. Data were analyzed by employing correlation and multiple regression analysis.

Findings – The results revealed that teamwork, organizational trust, organizational culture and customer focus are positively associated with employees' job satisfaction. It is also found that, where teamwork was perceived as a dominant TQM practice, improvements in job satisfaction levels were significant. Further, the result of the multiple regression analysis supports the proposed model based on the empirically validated soft TQM instruments, which are reliable and valid.

Originality/value – The findings make a significant contribution by using a major Malaysian OSAT organization that proves to be useful as an example of a methodology that might be used to track the extent of TQM effects on job satisfaction. A firm could use this instrument to do a pre-test baseline measurement, and then periodically re-administer it to identify changes associated with TQM efforts.

Keywords Total quality management, Outsourcing, Job satisfaction, Assembly plants

Paper type Case study

Introduction

Total quality management (TQM) is a key strategy for maintaining competitive advantage and is a way of managing organizations to improve its overall effectiveness

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and performance towards achieving world-class status (Zhang *et al.*, 2000; Chapman and Al-Khawaldeh, 2002). This functionality has increased considerably over the past few decades. In today's manufacturing environment, TQM is used as a powerful tool to quantify the way a business functions. Research has confirmed the strategic benefits of quality programs and better quality is proven to contribute to greater market share and return on investment (Cole, 1992; Philips *et al.*, 1983), lower manufacturing costs; improve productivity (Garvin, 1983) and improve the area of strategic performance (Zhang, 2000). Outsourced semiconductor assembly and test (OSAT) industry has become the spotlight of global manufacturing industries and is considered to be one of the major contributors to the global economy, and thus, quality management is strategically and tactically important for gaining a competitive advantage (Yang *et al.*, 2003).

Despite the considerable body of TQM literature that has evolved to examine the relationship between TQM and employees' job satisfaction in various countries as well as industries (for example, Guimaraes, 1996, 1997; Gardner and Carlopio, 1996; Lam, 1995, 1996; Noorliza, 1999; Noorliza and Zainal, 2000; Boselie and Wiele, 2002), there is no existing literature that recognizes TQM studies within the context of the Malaysian OSAT industry. Since Malaysia is one of the major suppliers of global semiconductor products, its quality management practices have a global impact (Yang *et al.*, 2003). Moreover, the OSAT industry is unique because the products are built strictly compliant to customers' specification and quality requirements. It differs from other industries in terms of their organizational structures, responses to the environment, managerial styles and the ways in which they compete against other firms. The importance of the TQM culture is enhanced through its impact on employee morale and work attitudes (Dose, 1997). Consequently, job satisfaction is likely to be influenced by aspects of TQM. Job satisfaction is important because of well-established association with a range of organizational outcomes (Gray *et al.*, 2003). In order to bridge the gap and provide organizations with practical assistance in dealing with this issue, this research uses a sample of a major organization within the Malaysian OSAT industry to examine, whether the application of TQM practices result in an improvement of employees' working conditions that inevitably contribute towards their job satisfaction.

In recent years, the emphases on human issues and involvement of employees have increased within the field of TQM (Cruickshank, 2000). Many commentators argue that in order to be fully successful and self-sustaining, TQM requires an extensive refashioning of "softer" practices (e.g. Schonberger, 1994; Dale *et al.*, 1994), whose elements consist of essentially dimensions of human resource management (HRM) (Wilkinson *et al.*, 1991; Wilkinson, 1992; Dale *et al.*, 1994). A survey of the literature reveals that several TQM proponents believe that the soft aspects of TQM are essential to its success (Juran, 1964; Ishikawa, 1985; Deming, 1986; Aubrey and Felkins, 1998; Dale and Cooper, 1992; Cruickshank, 2000). Powell (1995, p. 15) concluded that "organizations that acquire the soft elements of TQM can outperform competitors without the accompanying TQM ideology". Evidence from the growing literature on TQM's failure emphasizes the neglect of the "soft" side of quality management wherein the HR and organizational behavioral aspects of quality management are not given their deserved emphasis (Lowery *et al.*, 2000; Wilkinson *et al.*, 1998; Cruickshank, 2000).

Many of the basic TQM elements dealing with people have been examined in previous studies such as: teamwork, reward and recognition, customer focus, organizational trust, extensive training, high level of communication, management commitment at all levels, employee involvement, empowerment and organizational culture (see, for example: Guimaraes, 1996, 1997; Noorliza and Zainal, 2000; Noorliza, 1999; Dale, 1999; Oakland and Oakland, 1998, 2001). Previous studies attempting to link TQM and employees' satisfaction have had limited outcome in scope and often affected by methodological constraints or inaccuracies. Some of these linked only one or two elements of TQM with employees' job satisfaction. Most of the previous studies are theoretical and only few provide empirical evidence to support their conclusions (Chapman and Al-Khawaldeh, 2002). In addition, many of the previous empirical studies used descriptive statistics (frequencies and means) to analyze data and evaluate the impact of TQM on employees' job satisfaction (i.e. Guimaraes, 1996, 1997; Morris, 1993) and a few used inferential statistics (correlations and multiple regression analyses) (Noorliza, 1999; Noorliza and Zainal, 2000; Gardner and Carlopio, 1996).

In order to overcome the limitations mentioned, this study contributes to the literature, by attempting to satisfy the clear need for an analytical study that examines recognizable soft elements of TQM, and linking TQM and employees' job satisfaction, using appropriate statistical methods (i.e. data analyses were used based on both descriptive and inferential methods) within a major Malaysian OSAT organization. Based on an extensive study of previous research on TQM, five core elements of soft TQM have been identified as key practices, which support an organization's business strategy towards the increase in employees' job satisfaction. These elements of TQM are: customer focus, teamwork, organizational culture, reward and recognition and organizational trust. Dale (1999) further enumerates that the key practices listed above are relevant to organizational excellence and people-oriented aspects such as job satisfaction from a TQM's perspective.

In view of the absence of such research on these relationships, therefore, this paper reports the results of a survey that was designed to address three research questions:

- (1) What essential TQM practices should be developed that would prove to be an effective guide in the measurement of employees' job satisfaction?
- (2) Does the perceptions of employees towards TQM practices affect their job satisfaction?
- (3) To what extent are the effects of TQM practices evident on employees' perception and job satisfaction?

This research is particularly important, and seeks to explore the degree of impact, in which the implementation of TQM practices poses to benefit the employees within a major Malaysian OSAT organization, and further measuring the relationship between TQM and employees' job satisfaction apart from identifying problem areas, their possible remedies respectively and also prominent improvements.

The purpose of this investigation is four-fold. Firstly, to identify a set of soft TQM principles that would prove to be an effective guide in the measurement of employees' job satisfaction. Secondly, to present a model as a systematic way to measure the extent of impact employees' perceptions have in relation to the implementation of soft TQM practices on employees' job satisfaction, which have become an integral component of an organization where job satisfaction is vital. Thirdly, it is to explore

the relationship between TQM practices and job satisfaction and lastly, to assess which TQM practice is strongly associated with job satisfaction?

Job satisfaction

Conceptual research framework

The conceptual schema of this study focuses on the development of a theoretical TQM model as a systematic way in measuring employees' job satisfaction within a major Malaysian OSAT organization. Examining the relationship between TQM and job satisfaction should contribute to our knowledge of the complexity of the relationship that exist between them.

The link between TQM principles and job satisfaction is illustrated in Figure 1. In this theoretical framework, TQM practices are independent variables and job satisfaction is a dependent variable. The present study thus attempts to bridge the gap by providing a basis for a thorough and insightful discernment of TQM and job satisfaction. The model suggests that the greater the extent to which these TQM practices are present, the greater will be the satisfaction among employees.

Hypothesis development

Based on the extensive study of previous research, it would therefore suggest that TQM improves employees' job satisfaction. As such, the following hypothesis is proposed:

- H1.* TQM practices such as teamwork, reward and recognition, organizational culture, customer focus and organizational trust are positively associated with job satisfaction within their organization.

Methodology

In this section we discuss sample and data collection procedures and operational measures of variables used in the study as well as the statistical tests used to evaluate the hypothesis.

Sample and procedures

Data were collected from employees within various departments of a large award-winning TQM OSAT organization located in the state of Perak, Malaysia.

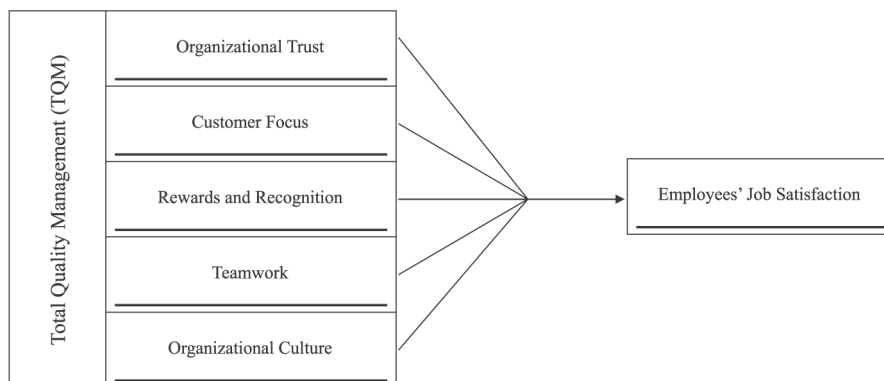


Figure 1.
The research framework

The Company was selected and viewed as the best and most valid representation of the entire OSAT industry in Malaysia for the exploratory survey in this study for two main reasons. Firstly, the company is Malaysia's largest foundry representing its sales revenue, ranking among the top ten in the world. Secondly, the company is also the second-largest OSAT player in the world in terms of volume production, responsible for some 5.2 billion units in 2004 (Khadpe, 2005). As this firm is considered to be one of the major contributors to the Malaysian economy with such merits, this research chose to examine the degree of application of TQM elements, and then investigate the relationship between TQM implementation and employees' job satisfaction within a Malaysian OSAT organization's context. The survey was conducted between the months of February till June 2004.

The questionnaire survey was the main form of data collection. The questionnaires were distributed to all employees from different job levels and functions within the organization. They were distributed through an officer/coordinator from either the human resource or administration department within the organization. A covering letter explaining the purpose of this study was attached together, assuring them of the confidentiality of their responses, and instructing them to complete the questions, seal and return the completed questionnaires using the attached envelope. Out of the 300 questionnaires distributed to employees in this organization, 230 usable questionnaires were returned, yielding a response rate of 76.6 percent, which is considered acceptable.

There were 152 female and 78 male respondents. The age range of the sample was from ages 21 to 45 years with a mean of age 33 years. Out of 230 respondents, 82 (over 35 percent) had achieved at least a high school qualification. Employees from four types of occupational groups were represented in the sample (i.e. operators, $n = 134$; staff, $n = 69$; executives, $n = 21$; managers, $n = 6$). The operator positions included resource and production groups personnel. The staff positions included administrative and general clerks. The executive classification included engineers, supervisors, accountants and programmers. The managerial group included middle managers and senior managers responsible for a single section or several work areas.

Variable measurements

Independent variables: TQM practices. A total of 21 questions captured the five TQM variables under investigation. The questionnaires on TQM dimensions were grouped into five elements; namely, reward and recognition, customer focus, organizational culture, organizational trust and teamwork. The importance of the five constructs of TQM practices are described below:

- (1) *Reward and recognition.* This principle can be defined as benefits, such as increased salary, bonuses and promotion resulting from the annual review of performance, which is conferred for public acknowledgement of superior performance with respect to goals (Juran and Gryna, 1993). This construct was measured by a five-item scale adopted from Zhang *et al.* (2000). The items were measured on a five-point Likert format which ranged from (1) "strongly disagree" to (5) "strongly agree". Sample items include: "reward and recognition system within the company, rewards relationship and task accomplishments based on work quality" and "the company's compensation system encourages team and individual contributions". The alpha reliability of the scale in this study was 0.80.

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- (2) *Customer focus*. This principle can be defined as the degree to which firms continuously satisfy customer needs and expectations (Philips *et al.*, 1983). This construct was measured by a four-item scale developed by Zhang (2000). Responses were on five-point Likert format and ranged from (1) “strongly disagree” to (5) “strongly agree”. Sample items include “the company conducts market research in order to collect suggestions for improving its products” and “this company collects extensive complaint information from customers”. The alpha reliability of this scale was 0.70.
 - (3) *Organizational culture*. This principle refers to a set of values and guiding beliefs shared by members within an organization. It is not only able to change, guide and display but also give significant contributions by influencing the thought, feeling, interaction and performance within the organization (Yusof and Ali, 2000). This construct was measured by a four-item scale adapted from Lau and Idris (2001). Responses were on a five-point Likert format ranging from (1) “strongly disagree” to (5) “strongly agree”. Sample items include: “a comprehensive culture exist within the company to support and enhance effective people and team processes” and “operators are empowered to take direct action whenever they encounter a problem that will impact quality, cost or output”. The scale’s alpha reliability was 0.72.
 - (4) *Organizational trust*. This principle refers to the extent to which the organization trusts their employees’ capabilities and abilities to have control over their work, to run or to make changes to the organization (Noorliza and Zainal, 2000). This construct was measured by a four-item scale developed by Lau and Idris (2001). Responses were on a five-point Likert type format ranging from (1) “strongly disagree” to (5) “strongly agree”. Sample items include: “openness, honesty and constructive feedback are highly valued and demonstrated as organizational traits” and “the organization’s practices of core values and key beliefs are evident and real”. The alpha reliability of the scale in this study was 0.83.
 - (5) *Teamwork*. This principle refers to the extent to which the organization practices to increase employees’ control in their work and allow them to work together. The practice allows employees at all levels to be more involved in the job and to work together company-wide (Noorliza and Zainal, 2000). This construct was measured with a four-item scale developed by Zhang *et al.* (2000). Responses on a five-point Likert format ranged from (1) “strongly disagree” to (5) “strongly agree”. Sample items include: “I am more comfortable working in a team rather than individually” and “work within this department is appointed around groups”. The scale’s alpha reliability in this study was 0.74.

Dependent variable: job satisfaction. Job satisfaction can be defined as an emotional reaction that “results from the perception that one’s job fulfils or allows the fulfillment of one’s important job values, provided that it is to the degree that those values are congruent with one’s needs” (Locke, 1976, p. 1307). This was operationalized by a five-item scale adopted from Wright and Cropanzano (1998) reflecting overall satisfaction with the job. Each item measured a dimension of the satisfaction constructs: degree of satisfaction with the work, co-workers, and supervision, total pay and promotional opportunities. The constructs included the following items: “all in all,

I am satisfied with my co-workers” and “all in all, I am satisfied with the work of my job”. Each item requires the respondents to indicate their agreement or disagreements on a five-point scale ranging from (1) strongly disagree to (5) strongly agree. The internal consistency reliability coefficient for the scale is 0.79.

Analysis of data

The statistical computer program used for the questionnaires data analysis was SPSS for Windows Version 11.0. Correlation studies were used to determine the relationship between the dependent and independent variables. TQM practices were regressed against job satisfaction. The multiple regression analyses confirmed the significance of the independent and dependent variables.

Results of the survey

Factor analysis and scale reliabilities

A principal component factor analysis with varimax rotation was conducted to validate the underlying structure of TQM practices (Table I). In interpreting the factor, only a loading of 0.5 or greater on the factor and 0.35 or lower on the other factors are considered. Results of the varimax rotated analysis indicated the existence of five significant factors with eigenvalues (i.e. 2.690) greater than one that explained 53.79 percent of the variance. The KMO measure of sampling adequacy value for the item was 0.84 indicating sufficient intercorrelations with the Bartlett’s test of spehericity was also found to be significant (Chi-square = 471.056, $p < 0.001$). These factors were namely reward and recognition (five items), customer focus (four items), organizational culture (four items), organizational trust (four items), and teamwork (four items), respectively. Thus, a model with five factors may be adequate to represent the data because the result of the analysis can be considered satisfactory since they do not exceed 60 percent of the explained variance recommended in social sciences (Hair *et al.*, 1998). The results of the factor analysis are summarized in Table I.

Similarly, another factor analysis was undertaken to see the dimensionality of the independent variable (job satisfaction). A single factor solution emerged with eigenvalue of 2.32 explaining 46.45 percent of variance in the data. The KMO measure of sampling adequacy was 0.83 indicating sufficient intercorrelations, while the

Measure	Items	Factor loading	KMO	Eigenvalue	Variance explained (%)	Reliability
<i>Independent variables</i>			0.842	2.690	53.79	
Reward and recognition	5	0.510-0.756				0.80
Customer focus	4	0.531-0.945				0.70
Organizational culture	4	0.516-0.802				0.72
Organizational trust	4	0.700-0.795				0.83
Teamwork	5	0.598-0.719				0.74
<i>Dependent variable</i>						
Job satisfaction	5	0.653-0.797	0.831	2.323	46.45	0.79
Note: $n = 230$						

Table I.
Factor analysis and scale reliabilities – independent variables

Bartlett's test of sphericity was significant (Chi-square = 338.922, $p < 0.01$). Thus, we have further evidence of the factorability of the items.

The reliability of the questionnaire was tested according to Cronbach alpha measurements. The reliability coefficient (alpha) of each element of TQM was as follows: reward and recognition (80 percent); customer focus (70 percent); organizational culture (72 percent), organizational trust (83 percent), and teamwork (74 percent). The reliability coefficients of all the five elements of TQM were above 0.70, which concurs with the suggestion made by Nunnally (1978).

Descriptive statistics analysis

Table II indicates that employees' within the Malaysian OSAT organization perceived teamwork (with the highest mean scores, i.e. $M = 3.92$, $SD = 0.56$) to be the most dominant TQM implementation practice within their firm and evident to a considerable extent, followed by reward and recognition ($M = 3.91$, $SD = 0.54$), organizational trust ($M = 3.73$, $SD = 0.61$), and organizational culture ($M = 3.72$, $SD = 0.59$), which were all rated as moderate practices of their firm. Customer focus ($M = 3.69$, $SD = 0.60$), with the lowest mean score was perceived on the overall as least practiced within this organization. Meanwhile, the degree of TQM implementation practices on employees' satisfaction in this organization was largely positive. The standard deviations were quite high, indicating the dispersion in a widely spread distribution. This means that the effects of TQM practices on employees' job satisfaction are an approximation to a normal distribution. This also indicates that respondents had high levels of employees' job satisfaction.

Correlation analysis: relationships between the variables

The correlation matrix in Table II further indicates that TQM practices were positively and moderately correlated with employees' job satisfaction. There was a significant positive relationship between teamwork and job satisfaction ($r = 0.57$, $n = 230$, $p < 0.01$). The positively moderate correlation were for organizational culture and job satisfaction ($r = 0.49$, $n = 230$, $p < 0.01$), organizational trust and job satisfaction ($r = 0.55$, $n = 230$, $p < 0.01$) and between customer focus and job satisfaction ($r = 0.46$, $n = 230$, $p < 0.01$). The weakest correlation was for reward and recognition, and job satisfaction ($r = 0.40$, $n = 230$, $p < 0.01$). The correlation coefficients between the independent variables (i.e. TQM practices) and the dependent variable (i.e. job satisfaction) were less than 0.9, indicating that the data was not affected by a collinearity problem (Hair *et al.*, 1998). These correlations are also further evidence of

	Mean	Standard deviation	1	2	3	4	5
Reward and recognition	3.91	0.54					
Customer focus	3.69	0.60	0.52 *				
Organizational culture	3.72	0.59	0.49 *	0.55 *			
Organizational trust	3.73	0.61	0.53 *	0.60 *	0.68 *		
Teamwork	3.92	0.56	0.41 *	0.38 *	0.51 *	0.61 *	
Employees' job satisfaction	3.76	0.59	0.40 *	0.46 *	0.49 *	0.55 *	0.57 *

Notes: $n = 230$; *Correlation is significant at $p < 0.01$ level (2-tailed)

Table II.
Correlations of TQM
practices and employees'
job satisfaction

validity and reliability of measurement scales used in this research (Barclay *et al.*, 1995; Hair *et al.*, 1998). The results indicate that the most important TQM practice affecting employees' job satisfaction was teamwork (i.e. with the highest scores of correlation), which goes to prove that where teamwork was perceived as a dominant TQM practice, improvements in employees' job satisfaction levels were significant. The findings displayed that the respondents who perceived a greater awareness of TQM practices exhibited the more positive reactions in favor of job satisfaction.

Multiple regression analysis

Research hypotheses were tested using a multiple regression analysis. It is a useful technique that can be used to analyze the relationship between a single dependent (criterion) variable and several independent variables (predictor or explanatory) variables at one time. In this analysis, a set of independent variables is weighted to form the regression variate (regression equation or model) and that may be used to explain its relative contribution toward one dependent variable (Hair *et al.*, 1998). This analysis was undertaken to better understand the relationship between TQM practices and employees' job satisfaction. The summary of the result analysis is depicted in Table III.

As noted in Table III, *H1* measures TQM practices and its association with employees' job satisfaction. This hypothesis states that employees exposed to high levels of TQM practices will experience high levels of job satisfaction. The F-statistics produced ($F = 32.29$) which was significance at 1 percent level (Sig. $F = 0.000$), thus confirming the fitness for the model. The Durbin-Watson of 1.922 falls between the acceptable range ($1.5 < D < 2.5$) indicating no autocorrelation problem in the data. Therefore, it indicates that the error term is independent. The results indicate no multicollinearity problems (the multicollinearity statistics shows that the tolerance indicator for reward and recognition, customer focus, organizational culture, organizational trust and teamwork are all greater than 0.1, and Variation Inflation Factors (VIF) are all lesser than 10). This indicates that there is a statistically significant relationship between TQM practices and employees' job satisfaction. The coefficient of determination, R^2 was 41.9 percent. This expresses that TQM can significantly account for 41.9 percent in employees' job satisfaction. Thus, *H1* was partially supported.

Independent variable (s)	Employees' job satisfaction			Result	Collinearity statistic	
	Beta	<i>t</i> -value	Sig.		Tolerance	VIF
(Constant)		2.390	0.02			
Teamwork	0.339	5.145	0.00**	Accept	0.599	1.670
Customer focus	0.161	2.372	0.02*	Accept	0.563	1.776
Organizational trust	0.164	1.984	0.04*	Accept	0.381	2.625
Reward and recognition	0.039	0.607	0.54	Reject	0.638	1.568
Organizational culture	0.096	1.312	0.02*	Accept	0.482	2.077

Table III.
Regression analysis of
TQM practices on
employees' job
satisfaction

Overall model $F = 32.29$; $p < 0.01$; $R^2 = 0.419$; Adjusted $R^2 = 0.406$; Durbin-Watson test = 1.922

Notes: $n = 230$; *Significant at $p < 0.05$ level (2-tailed); **Significant at $p < 0.01$ level (2-tailed)

The results also indicated that there were four elements of TQM; namely, teamwork, customer focus, organizational culture and organizational trust which are positively associated with employees' job satisfaction. It can be argued that these four elements of TQM focus on: teamwork ($p < 0.01$), customer focus ($p < 0.05$), organizational trust ($p < 0.05$) and organizational culture ($p < 0.05$), and are all directly involved in the improvements in employees' job satisfaction. Moreover, the findings also indicate that the most important TQM practice that explains the variance in employees' job satisfaction was teamwork and were significant at the 1 percent levels ($p < 0.01$). The other element of TQM, namely, reward and recognition are not significantly associated with employees' job satisfaction. However, reward and recognition have provided longer term, infrastructural benefits necessary for the continued improvement over time, but with an indirect association towards employees' job satisfaction.

Discussion

The overall objective of this study was to investigate the relationship between TQM practices and employees' job satisfaction within a major Malaysian OSAT organization. The results of this study revealed that where teamwork was perceived as a dominant TQM practice, there was a strong association with job satisfaction. The result implies that TQM recognizes and emphasizes the importance of teamwork to facilitate employees' ability to work together to get a job done (Morrow, 1997; Noorliza, 1999; Noorliza and Zainal, 2000; Gifford *et al.*, 2002). The results also provide supporting evidence for the views of Osland (1997), which found that working together with a production unit lead to better employee attitudes. According to Anschutz (1995), participation in teamwork was the major factor for a successful organization to achieve partnership between workers and managers.

In contrast, there was a weak relationship between reward and recognition and employees' job satisfaction. Reward and recognition was found to have insignificant contributions towards employees' job satisfaction. This indicated that both recognition and rewards required motivating effects on people at work. Further, aspects of emphasis on rewards such as fairness, opportunities for professional growth, high pay, and praise for good performance does not appear to influence employees' job satisfaction in this study. The present results are in contrast with the findings from previous study conducted by O'Driscoll and Randall (1999), in which he found that the rewards offered by an organization have a positive effect on employees' satisfaction towards their job and the organization for which they work.

However, the findings indicate the importance of customer focus, organizational culture and organizational trust for predicting job satisfaction. For instance, customer focus was found to have a positive influence on employees' job satisfaction. Focusing on delivering customer value in implementing TQM, encourage managers to make the best use of their people and resources in order to create products that customers value (Chapman and Al-Khawaldeh, 2002). The significant relationship between customer focus and employees' satisfaction indicate that management encouraged efforts and succeeded to translate its satisfaction and commitment into this improvement practice (Morrow, 1997; Boselie and Wiele, 2002; Oakland and Oakland, 1998, 2001). This may be due to well-established support relationship between employees and customers. This conclusion is consistent with TQM's theory (e.g. Dale *et al.*, 1997).

In addition, organizational trust was also found to have a positive contribution towards employees' job satisfaction. This suggests that employees require support and trust, from executives and management teams, for more TQM practices. It is important that management practice empowerment and trust their employees' capabilities to have control over their working lives. The results are consistent with previous research which found that employees with high reciprocal trust had better opinions of their managers and experienced higher satisfaction, involvement, well-being and commitment (Flatherty and Pappas, 2000; Noorliza and Zainal, 2000; Gilbert and Tang, 1998; Cook and Wall, 1980).

The result also indicated that there was a positive relationship between organizational culture and employees' job satisfaction as well as identification with the organization. The findings stresses on the need to monitor organizational culture and to evolve better TQM practices so that employees' job satisfaction and other work-related outcomes are maintained at a high level. The results provide supporting evidence for the views of Yusof and Ali (2000), which states that organizational culture is not only able to change, guide, and display behavior of the individual but also give significant contributions by influencing the thoughts, feelings, satisfaction, interaction and affective reactions within the organization.

Further, the result of simple and multiple regression analyses confirmed that the job satisfaction variable was significantly related to perceptions of TQM practices and thus implementing TQM does payoff. The result of this regression analyses also supports the proposed model based on the empirically validated TQM implementation instruments, which are reliable and valid. This study also supports the findings from previous studies conducted by Guimaraes (1996) and Gardner and Carlopio (1996) which found that with TQM practices, on average, employees reported higher job satisfaction within the organization. Thus, in terms of human resource management goals and objectives, one is encouraged to think that TQM programs have a positive influence as Guimaraes (1996) indicates.

Conclusions, implications and research limitations

In summary, the paper reports an exploratory investigation of the relationship between TQM practices and employees' job satisfaction within a large Malaysian OSAT organization. As claimed by some authors (e.g. Guimaraes, 1996, 1997; Noorliza and Zainal, 2000; Noorliza, 1999), TQM does have significant effects on personnel attitudes towards their job and the organization. The single company yield test revealed that employees' perceptions of TQM practices are positively related to job satisfaction, with those perceiving a greater awareness of TQM practices exhibiting the more satisfactory reactions towards their job. The development of TQM practices should provide useful measures for investigating the relationship between TQM practices and job satisfaction particularly in relation to the major Malaysian OSAT organization where studies are yet to be conducted. The findings are considered to have made a significant contribution by using a major Malaysian OSAT organization that proves to be useful as an example of a methodology that might be used to track the extent of TQM effects on job satisfaction. A firm could use this instrument to do a pre-test baseline measurement, and then periodically re-administer it to identify changes associated with TQM efforts. The findings identify four elements of TQM practices, namely, teamwork, customer focus; organizational culture and organizational trust are

more significantly associated with improvement in job satisfaction. The implication is that organizations should focus firstly on teamwork, customer focus, organizational trust and organizational culture. Another lesson to be learned is that the other element of TQM, namely, reward and recognition, is provider of long-term, infrastructural benefits necessary for the continued improvement over time, but with a less significant relationship with employees' job satisfaction. The findings could prescribe potential implications for top management to review their TQM programs, consistent with the training needs of the employees within the organization. Hence, employee will be more likely to perform better and feel a higher level of job satisfaction and increasing levels of commitment towards the organization. Further, the finding enhances our understanding of the association between soft TQM and employees' job satisfaction. To the best of the authors' knowledge, this is the first study that examines the association between TQM and employees' job satisfaction, within the OSAT work environment. Finally, the findings from this study creates awareness and understanding for the development of a theoretical base for application of soft TQM practices resulting in an improvement of employees' working conditions that inevitably contributes towards their job satisfaction.

The authors realize that there are some limitations, which must be considered for future research. Firstly, although the survey results were derived from a single Malaysian OSAT organization representing a major Malaysian OSAT industry; future research may collect data from other regions, e.g. US, other Asian countries, and Europe, in order to have a more comprehensive study of the global OSAT manufacturing industry. The results gathered may generally be limited, although this study was the first one aimed at developing an instrument for measuring the relationship between TQM and employees' job satisfaction within the context of a major Malaysian OSAT firm. In order to improve external validity of the instrument, additional studies would be needed, with increased sample sizes, geographical diversity, organization type, and so on. Secondly, the findings are based on the use of self-reported survey data, which may be affected by response biases. Thirdly, cross-sectional data analysis cannot confirm the direction of causality implied in our research model, so it is necessary to be cautious in conclusions regarding causality. For example, despite the significant relationship shown between soft TQM practices and employees' satisfaction, the cross-sectional nature of this research precludes any conclusion of causality between TQM practices and satisfaction. For this reason, a longitudinal study of TQM practices is strongly recommended and long overdue. Fourthly, it is also important that other major constructs related to the TQM implementation process (including degree of employee participation, degree of employee empowerment, and level of top management commitment, level of education and training and communication among different groups involved) should be added to the conceptual framework underlying this study. Finally, while the measure of job satisfaction comprises of only a small number of items, which tapped different aspects of job satisfaction behavior, and does not represent an overall view of job satisfaction, therefore this is a considerable biased view for this study. Future research may be beneficial, if more items and better measures are developed, in relation to this outcome variable. It is also proposed that future research be conducted in other types of organizations such as manufacturing and service using a similar approach. Furthermore, a wider range of employees' affective reactions such as task

characteristics, role ambiguity, role conflict, career satisfaction, organizational commitment, job involvement and others can be incorporated into a more comprehensive study, as this study chooses to cover only one type of employee attitude.

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Job satisfaction