

Relationships among TQM Practices, Role Conflict, and Role Ambiguity: A Review and Empirical Study

This study examines the multidimensional and mediating relationships between six Total Quality Management (TQM) practices, role conflict and role ambiguity. Survey data are collected from 422 employees from ISO certified firms in Malaysia. With the use of structural equation modelling, the findings indicate that higher levels of process management and information analysis lead to lower levels of role conflict. The presence of a quality-oriented human resource focus induces higher levels of role conflict. Strategic planning is negatively related to role ambiguity. Customer focus and role conflict are found to be independently and positively related to role ambiguity. Role conflict is found to be a full mediator between the following: human resource focus and role ambiguity; process management and role ambiguity; information analysis and role ambiguity. The research model serves as a diagnostic tool for the organisational administrators to manage the individual employee stress behaviour by leveraging current TQM practices, and fine-tune the right characteristics to reduce undesirable role conflict and role ambiguity. The study and its findings have filled the research gap in the literature of TQM and psychological well-being of employees. The inclusion of mediating effects in this study is an important distinction that other studies have not identified.

Keywords: Malaysia; role conflict, role ambiguity, structural equation modelling, total quality management.

1. Introduction

The pursuit of Total Quality Management (TQM) has become a key organisational practice in improving quality, efficiency and organisational performance. Although the origins of TQM came from Japan, many firms around the world have incorporated the practices of TQM in their operations. Since both manufacturing and service organisations have started looking towards TQM as a strategy to maintain their competitive advantage (Zakuan *et al.*, 2010), a progression of TQM programs such as ISO series and Six Sigma has gained widespread acceptance in both manufacturing and service industries.

TQM is defined as a holistic management philosophy that strives to satisfy customer needs and expectations through continuous improvement efforts in every function and process within an organisation (Kumar *et al.*, 2009; Prajogo and McDermott, 2005). Because many of the processes, resources and results of TQM are

basically people-oriented, the success of a TQM program is highly dependent on how employees understand and engage in these people-oriented issues of TQM (Karia and Assari, 2006; Khoo and Tan, 2003). An extensive review on the recent TQM literature has shown that researchers have limited their studies to focus on the consequences of TQM on organisational and financial performance (Tanninen *et al.*, 2010; Kumar *et al.* 2009), quality and innovation performance (Claver and Tari, 2008), relationship between TQM and organisational culture (Kaluarachchi, 2010), effect of TQM practices on employees satisfaction and loyalty (Chang *et al.*, 2010). Within the Malaysian context, past and recent literature have accumulated knowledge on the conceptual framework of TQM (Zakuan *et al.*, 2010), impact of TQM on service quality (Agus *et al.*, 2007), organisations' quality performance (Abdullah *et al.*, 2008), and customer satisfaction (Sit *et al.*, 2009). Some studies have also been conducted in Malaysia to evaluate the consequences of TQM on individual psychological and behavioural outcomes, including job satisfaction (Ooi *et al.*, 2008), job involvement (Karia and Asaari, 2006), and propensity to stay in the organisation (Ooi *et al.*, 2006). However, one major issue that has not been addressed in the TQM literature is how different TQM practices interact and affect the role stressors (i.e., role conflict and role ambiguity) experienced by employees. This is an important issue which will be studied in this paper, because TQM challenges general assumption about the roles, responsibilities and interrelatedness of the management, accounting and human resource practices (Hayes *et al.*, 1994), and therefore the implementation of such TQM practices has significant implications on employees' role stressors, which are the key factors in work-related stress. According to Kanji and Chopra (2009), work-related stress contributes more than a third of all new incidences of ill health, and a total of 13.8 million working days were lost to work-related stress,

depression and anxiety from year 2006 to 2007. Therefore, there is a need to gain insight into the implication of TQM practices on employees' role stressors (i.e., role conflict and role ambiguity) in order to overcome the above problems related to work stress, as well as to improve employee well-being.

The issue of role conflict and role ambiguity also seems to have been ignored in TQM research in other countries worldwide. Some researchers (e.g., Jun *et al.*, 2006; Boselie and van der Wiele, 2002; Kivimaki *et al.*, 1997) have studied the impact of TQM on employees' psychological and behavioural outcomes such as employee satisfaction, organisational commitment and intention to leave. Nevertheless, the existing TQM literature has not addressed the underexplored question at the nexus between TQM practices and employees' role stressors (i.e., role conflict and role ambiguity). Although much has been said about employees being one of the primary revenue-producing and cost-generating factors in organisations practicing TQM, this area has been neglected in the TQM literature.

Within the organisational psychology literature, there have been some studies on role stressors concerning the consequences of role conflict and role ambiguity on individual attitudinal and behavioural outcomes such as job satisfaction (Newton and Jimmieson, 2008), organisational commitment (Lankau *et al.*, 2006), and intention to quit (Monsen and Boss, 2009). However, these studies have neglected the impact of TQM practices on role stressors experienced by employees, which is a gap in the literature which is subject of this paper. Although the past studies on role stressors have provided useful insights, interest in this study has shifted toward organisational variables (i.e., TQM practices) because role stressors are not solely related to interpersonal variables. Instead, TQM practices that pervade every division of an organisation influence the levels of role stressors experienced by employees.

Therefore, understanding relationships between TQM practices and role stressors is aimed at bridging the research gap between TQM and role stressor literature, assisting TQM-oriented organisations in developing a “low stress” work environment, and helping employees cope with role stressors.

The focus of the present study is to formulate, examine and establish a research model linking the multidimensional and mediating relationships between TQM practices, role conflict and role ambiguity. The remainder of the paper is structured as follows: First, the concepts of role theory, TQM practices, role conflict and role ambiguity are defined. A literature review concerning the relationships between six TQM practices, role conflict, and role ambiguity is also presented. In the next section, a research model is illustrated and followed by a discussion on the research methodology employed. Finally, the results are discussed and followed by theoretical and managerial implications, research limitations as well as conclusions of the study.

2. Literature review

2.1 Role theory

Role theory is a sociological study of role development based on a dramaturgical metaphor (Solomon *et al.*, 1985). According to Young (2007), role theory is often used as a research framework in the social science studies to investigate the expected human behaviour in a given situation. For example, Shivers-Blackwell (2004) used role theory as a mechanism to study how managers’ perceptions of the organisational setting affect their transformational and transactional leadership behaviours. According to Biddle (1986), there are five perspectives of role theory, namely: (1) functional role theory; (2) symbolic interactionist role theory; (3) structural role theory; (4) organisational role theory; and (5) cognitive role theory. Within these five

perspectives of role theory, organisational role theory stresses role development in formal organisation (Biddle, 1986). According to organisational role theory, every employee performs the work-roles that are assigned by the organisation in order for an organisation to function as a social entity (Wickham and Parker, 2007). Because organisational role theory represents a point of articulation between the organisation and individual, this theory provides an appropriate conceptual bridge between TQM practices, role conflict and role ambiguity experienced by employees. To understand how employees' perceptions of the TQM practices influence their role conflict and role ambiguity, organisational role theory is applied as the theoretical framework for this study.

2.2 TQM practices

In the TQM era (1988-), new measurements are established based on individuals' subjective evaluations of intangible systemic aspects (e.g., leadership) and intangible outcomes (e.g., customer satisfaction) (Dahlgaard and Dahlgaard, 2002). One way to define TQM is to analyse the meaning of each word: total, quality and management. Ho (1995, p. 4) defined TQM as follows: "Total means everyone associated with the company is involved in continuous improvement (including its customers and suppliers if feasible); Quality means customers' expressed and implied requirements are met fully; Management means executives are fully committed". Following a review by Curkovic *et al.* (2000), the Malcolm Baldrige National Quality Award (MBNQA) is found to be best fit the definition of TQM. The MBNQA has several strengths that provide rationale for its adaptation as the constructs of TQM in this study. First, the MBNQA not only codifies the ideology of quality management in an understandable language but also provides organisations with a comprehensive framework for evaluating their organisational progress with a new management

paradigm such as increased customer satisfaction and employee involvement (Garvin, 1991). Second, the MBNQA framework has included the popular philosophies and strategies advocated by the leading quality theorists in both North America and Asia (Winn and Cameron, 1998). Third, the MBNQA's core values and concepts are always updated and revised to reflect the latest development and thinking in quality improvement (Tai and Przasnyski, 1999). Finally, the MBNQA has been served as a well-accepted framework for operationalizing the dimensions of TQM (He *et al.*, 2011; Flynn and Saladin, 2006). On the basis of the literature, the TQM constructs in the present study are conceptualised in terms of the six criteria used to determine the winner of the MBNQA, namely, leadership, strategic planning, customer focus, human resource focus, process management and information analysis.

2.3 Role conflict

Role conflict occurs when different expectations impinge concurrently, resulting in “dissonance” for the individual who aims to perform the incompatible roles (Lynch, 2007). For example, employees are likely to experience role conflict when they are required to produce higher quantity while meeting the call of management to produce quality products and services (Antonioni, 1996).

In some research (e.g., Schaufeli *et al.*, 2009; Babin and Boles, 1996), role conflict has been considered as a mediator variable in a causal model of employee behaviour. In a recent publication, Schaufeli *et al.* (2009) reported that role conflict is found to be a full mediator between the following relationships: workaholism and job demands; burnout and well-being. On the basis of such findings in the literature, role conflict is also treated as a mediator variable that links the TQM practices and role ambiguity in this study.

2.4 Role ambiguity

Role ambiguity occurs when an individual is uncertain about the role expectations and has no idea on how to perform the role (Tang and Chang, 2010; Ortqvist and Wincent, 2006). For example, Information Systems (IS) managers experience role ambiguity when dealing with conflicting, unclear and varying expectations from many users, and having to act with uncertain authority (Weiss, 1983). In this regard, role ambiguity may be a challenge to employees because when an individual experiences role ambiguity, his or her ability to visualise job performance is affected, resulting in less confidence to perform job effectively (Li and Bagger, 2008).

Several researchers (e.g., Wetzels *et al.*, 1999; Hartline and Ferrell, 1996; Babin and Boles, 1996) have reported that role conflict is found to have a significant and positive effect on role ambiguity. In fact, Michaels *et al.* (1987) posited that greater levels of role conflict create higher levels of role ambiguity because increased conflicting expectations communicated to an individual induce more uncertainty about how to prioritise and execute the expectations. Since role ambiguity is exacerbated by role conflict, it is hypothesised that:

[H1]: There is a positive relationship between role conflict and role ambiguity experienced by employees.

2.5 The relationship between TQM practices, role conflict and role ambiguity

2.5.1 Leadership

The implementation of TQM practices involves a change in the roles, responsibilities and behaviours of all organisational members which is set off by the leadership (Maguad and Krone, 2009). Leadership is conceptualised in terms of behavioural actions which demonstrate senior management's personal involvement in the process of quality improvement efforts, acceptance of responsibility for quality performance, visibility in creating and maintaining a quality excellence work environment and

sharing the vision and quality goals with the organisation (Rao *et al.*, 1997). Leadership facilitates team work and coordination among responders (Kim *et al.*, InPress). In the prior studies (e.g., Babin and Boles 1996, Michaels *et al.* 1987), leadership has been recognised as a determinant of role stress. In fact, reduced incidents of leaders providing incompatible expectations to employees will result in lower levels of role conflict experienced by these employees. Likewise, the more often managers engage in unambiguous communication about organisational goals, strategies and objectives, the lower employees' role ambiguity will be (Zeithaml *et al.*, 1988). Furthermore, there is a theoretical possibility that role conflict may mediate the effects of leadership on role ambiguity. Therefore, the following hypotheses are proposed:

[H2a]: There is a negative relationship between leadership and role conflict experienced by employees.

[H2b]: There is a negative relationship between leadership and role ambiguity experienced by employees.

[H2c]: Role conflict will fully mediate the relationship between leadership and role ambiguity experienced by employees.

2.5.2 *Strategic planning*

Strategic planning is the systematic process of establishing the organisation's goals and objectives for at least three years and developing the strategies that manage the acquisition and use of resources to realise these objectives (Kudla, 1980). Following Teh *et al.* (2008), strategic planning is seen to be a mechanism that can reduce the levels of role conflict and role ambiguity among the employees. The employees experience lower levels of role conflict when incompatible role expectations between departments are clarified and addressed through strategic planning, thus resulting in

lower levels of role ambiguity. In this regard, role conflict may play a role in mediating the effects of strategic planning on role ambiguity. Given that top management articulates the organisational goals in a way that employees from every level of the organisation could understand, employees are likely to experience lower levels of role ambiguity because they understand how the tasks and goals of their positions may relate to organisational goals (Ketokivi and Castaner, 2004). Therefore, the following hypotheses are proposed:

[H3a]: There is a negative relationship between strategic planning and role conflict experienced by employees.

[H3b]: There is a negative relationship between strategic planning and role ambiguity experienced by employees.

[H3c]: Role conflict will fully mediate the relationship between strategic planning and role ambiguity experienced by employees.

2.5.3 *Customer focus*

Customer focus is expressed by the firms' efforts to produce products and deliver services that meet the customers' needs (Dean and Bowen, 1994). In some instances, employees may experience greater stress when their standard and formal role requirements are different from customers' needs (Kennedy and Corliss, 2008). For example, a salesperson experiences role conflict when the requests of a customer and a supervisor are at odds (Babakus *et al.*, 1999), and perhaps some unit-pricing, substitution, or delivery policy may need to be violated in order to establish a sale (Boles and Babin, 1994). Role conflict is likely to mediate the effects of customer focus on role ambiguity. This is because employees experience role ambiguity when they receive conflicting expectations from employer and customers.

According to Hartline and Ferrell (1996), the contact employees who span the boundary between the organisation and its customers, are likely to be frustrated and confused in their search for the best way to perform their multiple roles. For instance, in the call centers environment, role ambiguity arises when employees seek to cut down the amount of time spent per call while still satisfying customers (Tuten and Neidermeyer, 2004). On the basis of the literature, the following hypotheses are proposed:

[H4a]: There is a positive relationship between customer focus and role conflict experienced by employees.

[H4b]: There is a positive relationship between customer focus and role ambiguity experienced by employees.

[H4c]: Role conflict will fully mediate the relationship between customer focus and role ambiguity experienced by employees.

2.5.4 Human resource focus

Human resource management is a vital department in an organisation, in which, employees (i.e., organisational inputs) are selected, appraised, trained, and rewarded to deliver the organisational output (Townley, 1993). According to Soderquist *et al.* (2010), the human resource management of an organisation requires continuous improvement in order to meet and integrate new requirements exemplified by the environment and competition. In fact, organisations which have embarked on TQM have often aligned recognition and promotions systems to reward those with accomplishments based on TQM-related activities. However, such performance assessments based on TQM-related activities are not necessarily comprehensive and may have missed out other measures. For example, it is evidently inadequate to simply measure employees' participation in quality improvement processes (e.g., the

number of quality circles formed, the number of quality suggestions made), and use quality indicators (e.g., the number of responses expressing customer satisfaction, the number of continuous quality improvement activities conducted) for performance assessment. Because reward and recognition systems have been tailored to fit a TQM strategy, it is argued that some employees, who accomplish high levels of work commitment and achievements but have been relatively passive in TQM related activities, are likely to be under-evaluated. Such employees would perceive that they have not been adequately rewarded with the result that these employees will experience more role conflict and role ambiguity. In some instances, role conflict could mediate the effects of human resource focus on role ambiguity. On the other hand, quality-oriented human resource management fosters the quality management environment through empowering employees (Ahire and O'Shaughnessy, 1998). However, Hartline and Ferrell (1996) reported a direct positive relationship between empowerment and role conflict experienced by employees. As such, the following hypotheses are put forward:

[H5a]: There is a positive relationship between human resource focus and role conflict experienced by employees.

[H5b]: There is a positive relationship between human resource focus and role ambiguity experienced by employees.

[H5c]: Role conflict will fully mediate the relationship between human resource focus and role ambiguity experienced by employees.

2.5.5 Process management

Process management accentuates high levels of coordination across a firm's activities for efficiency improvement (Benner and Tushman, 2002), which is also known as higher levels of formalisation. Following Ravichandran and Rai (2000), formalisation

of analysis and design methods, formalisation of reusability, fact-based management and process control are important for a successful management of the development process. According to Johnson *et al.* (1998), the occurrence of conflict between individuals' expectations and the organisation's expectations are reduced in a highly formalised organisation. This notion is supported by the past studies (e.g., Nicholson and Goh, 1983; Rizzo *et al.*, 1970) which have found a negative relationship between formalisation and role conflict experienced by employees. In addition, since formalisation helps to clarify roles, it has the tendency to reduce role ambiguity of employees (Agarwal, 1993). Given that process management reduces the conflicting roles communicated to an individual, which leads to less uncertain role demands, role conflict may mediate the impact of process management on role ambiguity. Thus, the following hypotheses are examined:

[H6a]: There is a negative relationship between process management and role conflict experienced by employees.

[H6b]: There is a negative relationship between process management and role ambiguity experienced by employees.

[H6c]: Role conflict will fully mediate the relationship between process management and role ambiguity experienced by employees.

2.5.6 Information analysis

Quality improvement efforts often involve formal data collection and analysis (Issac *et al.*, 2004). At a conceptual level, information and analysis refer to the availability, timeliness and usage of quality-related data at every hierarchal level in the firms (Rao *et al.*, 1997). According to Godfrey *et al.* (1997), the status and performance of materials, processes, departments, divisions, teams and individuals can be monitored through data collection and quality measurement systems. The organisational

performance will be improved if the information and analysis provided are timely and sufficient (Stone, 2007). When data collection and quality measurement systems become more reliable, the employees will experience lower levels of role conflict and role ambiguity because they are able to acquire and analyse timely information and are certain about their role expectations. In other words, the enhanced use of information analysis would result in less conflicting and ambiguous information communicated to an employee. In this regard, role conflict is likely to mediate the relationship between information analysis and role ambiguity experienced by employees. For these reasons, the following hypotheses are proposed:

[H7a]: There is a negative relationship between information analysis and role conflict experienced by employees.

[H7b]: There is a negative relationship between information analysis and role ambiguity experienced by employees.

[H7c]: Role conflict will fully mediate the relationship between information analysis and role ambiguity experienced by employees.

3. Research model

A research model as depicted in Figure 1 is developed to examine the relationship between TQM practices, role conflict and role ambiguity.

[Figure 1 near here]

4. Research methodology

4.1 Measures

The six dimensions of TQM practices are assessed using an adapted version of scales developed by Prajogo *et al.* (2007), Prajogo and Sohal (2006), Samson and Terziovski (1999), Sohail and Teo (2003) and Zhang *et al.* (2000). These scales are adapted because the scales are established to capture the dimensions of the MBNQA

framework which have been determined as the basis of this study. In this study, 42 items are grouped into six segments to measure the different dimensions of TQM practices, namely, leadership, strategic planning, customer focus, human resource focus, process management and information analysis. The response format is a 5-point Likert type scale ranging from “strongly disagree” to “strongly agree”.

Role conflict and role ambiguity are measured using scales developed by Rizzo *et al.* (1970). This instrument is used because the scales developed have been extensively validated and have established records for its psychometric properties (Gilboa *et al.*, 2008; Gonzalez-Roma and Lloret, 1998). A 5-point Likert type scale is utilised ranging from “strongly disagree” to “strongly agree”.

4.2 Samples and procedures

The unit of analysis for this research is individual, that is, the full-time salaried employees of ISO 9001:2000 certified organisations in Malaysia. ISO 9000 standard is considered a subset of TQM (Sila, 2007), and the basic principles of the ISO 9001:2000 series are in line with the principles of TQM, European Quality Award and the MBNQA (Gotzamani, 2010). In fact, ISO 9000 standard is a base for organisations to apply and certify a management system in relation to quality management (Heras-Saizarbitoria *et al.*, 2011). ISO 9000 certification is granted to the firms after they demonstrate that they have mapped operating processes associated with the quality of their products (e.g., manufacturing, new product development, and customer service), and that they have complied with these repeatable, standardised and documented processes (Benner and Veloso, 2008). For this reason, the employees of ISO 9001:2000 certified firms are selected in the present study.

The questionnaires are distributed to 100 ISO certified firms listed in the Federation of Malaysian Manufacturers (FMM) Directory (2007). The firms sampled

have included both manufacturing and service firms. A stratified random sampling method is used in the present study. This selection of sampling method is the most appropriate because stratified random sampling method forms heterogeneity among respondents which could minimise the common survey bias (Jun *et al.*, 2006). To ensure the samples selected could meet the objectives of this study, respondents are chosen from organisations located in different regions or states of Malaysia, namely, Selangor, Perak, Penang, Melaka and Kuala Lumpur. These five states are selected because these states are among the most industrialised states and economically the fastest growing in Malaysia (FMM, 2008; Kuala Lumpur Structure Plan 2020, 2008). Moreover, the world's leading electronics companies with manufacturing operations and manufacturing services are mainly situated in these regions (Malaysian Industrial Development Authority, 2008). The subgroup (or strata) used in this study are work departments and employment period at the current firm. These criteria are selected because individual staff's undergo different practices and training for the TQM program, depending on employees' job characteristics and their length of service at the current firm (Jun *et al.*, 2006).

A total of 650 questionnaires are distributed and 453 are completed and returned. Of the 453, 31 questionnaires have to be excluded as outliers. The outliers are detected using the graphical method, that is, residuals scatterplot. An examination of the standardised residuals within the range of ± 3 is performed to facilitate the detection of outliers. As a result, 422 returns are used for analysis, with net response rate of 64.92%. The profiles of the survey respondents are shown in Table 1.

[Table 1 near here]

5. Data Analysis

5.1 Scale validation

In the present study, structural equation modelling (SEM) is used to examine the relations among TQM practices, role conflict and role ambiguity as well as the mediating effect of role conflict between TQM practices and role ambiguity experienced by employees. The application of SEM is executed using the Statistical Package for the Social Sciences (SPSS) 11.5 and Analysis of Moment Structures (AMOS) 16.0. The estimation of parameters in the models is determined using maximum likelihood estimation. Four models are examined using the two-stage approach recommended by Anderson and Gerbing (1988). The first model (i.e., Measurement Model) involves the development of measurement models using confirmatory factor analysis (CFA) to achieve the best fitting group of items to represent each measurement scale. This is followed by a second-order CFA model (i.e., Structural Model 1) examining the relationships between TQM practices and role conflict. The third model (i.e., Structural Model 2) examines the relationship between TQM practices and role ambiguity. Even if the individual TQM practice affects role ambiguity experienced by employees, it appears quite possible that the relationship between TQM practices and role ambiguity is indirect and mediated by role conflict. Therefore, the fourth model (i.e., Structural Model 3) examines the relations among TQM practices, role conflict and role ambiguity as well as the mediating effect of role conflict between TQM practices and role ambiguity simultaneously.

A post hoc analysis to check for common method bias is also performed. This statistical analysis is known as Harman's single factor test (Podsakoff *et al.*, 2003). The results of the unrotated factor analysis show that more than one factor are produced. The largest factor explained only 18.94% of the total variance and no other factors explained more than 10% of the variance, indicating that there is no single or

general factor present. As a result, the problem of common method bias is not substantial in the study.

The internal consistency of each construct is evaluated by assessing the composite reliability. In the present study, the composite reliabilities of all latent constructs are calculated using the formula suggested by Fornell and Larcker (1981). As shown in Table 2, the composite reliabilities of all latent constructs are greater than the desirable values of 0.60 recommended by Bagozzi and Yi (1988). Discriminant validity can be assessed through the correlations analysis. Following Bagozzi and Warshaw (1990), discriminant validity is validated when each correlation is less than 1.0 by an amount greater than twice its respective standard error. Table 2 shows that all the correlations are less than 1.0 by an amount significantly greater than twice their standard errors. As a result, there is a strong evidence for discriminant validity among the measures.

[Table 2 near here]

5.2 Measurement and structural models

Model fit indices are taken into account to confirm the model fit to the data. In this study, the model fit indices used include the chi square (χ^2) test statistics/degrees of freedom (*d.f.*) ratio, goodness-of-fit (GFI) index, adjusted goodness-of-fit (AGFI) index, root mean square error of approximation (RMSEA), normed fit index (NFI), comparative fit index (CFI), and Tucker Lewis index (TLI). A summary of model fit indices for the measurement and structural models is provided in Table 3. There is a considerable fit for all models because the model fit indices of the models have exceeded the acceptance levels recommended by the prior studies (e.g., Hair *et al.*, 2010; Chau and Hu, 2001; Forza and Filippini, 1998; Vandenberg and Scarpello, 1994; Browne and Cudeck, 1993).

[Table 3 near here]

As shown in Table 4, the hypothesis testing results of structural model 3 have shown that strategic planning (path coefficient = -0.351, $p < 0.10$) is reported to have a significant and negative relationship with role ambiguity. Customer focus (path coefficient = 0.220, $p < 0.05$) and role conflict (path coefficient = 0.752, $p < 0.001$) are found to have a significant and positive relationship with role ambiguity. Human resource focus (path coefficient = 0.242, $p < 0.01$) is positively related to role conflict. Process management (path coefficient = -0.356, $p < 0.05$) and information analysis (path coefficient = -0.282, $p < 0.01$) are found to have a significant and negative relationship with role conflict. Therefore, the hypotheses H1, H3b, H4b, H5a, H6a and H7a are empirically supported. However, the findings do not support hypotheses H2a, H2b, H3a, H4a, H5b, H6b and H7b because the respective path coefficients are not significant in the predicted directions.

[Table 4 near here]

5.3 Mediation model

The Baron and Kenny (1986) statistic is used to test for the significance of the mediating effect. Three regression equations are used to test for the mediation model and the following three conditions must hold to establish the mediation. First, the independent variables must be shown to be significantly related to the mediator in structural model 1. Second, the independent variables must be shown to be significantly related to the dependent variable in structural model 2. Third, the mediator must affect the dependent variable in structural model 3. Full mediation is established when the previously significant relations between the independent and dependent variables in Structural Model 2 are insignificant in this Structural Model 3.

As presented in Table 5, the mediator (i.e., role conflict) is significantly related to the dependent variable (i.e., role ambiguity) in Structural Model 3, while human resource focus ($\beta = 0.045$, $p > 0.05$), process management ($\beta = -0.166$, $p > 0.05$), and information analysis ($\beta = 0.028$, $p > 0.05$) are found to have no significant relationship with role ambiguity. Hence, in comparing the results of structural models and Baron and Kenny (1986) test statistic, role conflict is found to be a full mediator between the following: human resource focus and role ambiguity; process management and role ambiguity; information analysis and role ambiguity. Thus, H5c, H6c and H7c are statistically supported.

[Table 5 near here]

6. Discussions

The research findings in this study indicate that role conflict is found to have a significant and positive relationship with role ambiguity. This result is consistent with the past studies (e.g., Wetzels *et al.*, 1999; Hartline and Ferrell, 1996; Babin and Boles, 1996), in which these researchers have reported that role conflict has a significant and positive effect on role ambiguity. The result of this study implies that the greater the conflict an employee perceives in the role, the more ambiguity the individual employee will perceive.

The present findings confirm that strategic planning is found to be significant in reducing the role ambiguity experienced by the employees. This result suggests that strategic planning is a structured process of setting the short and long term goals (Prybutok *et al.*, 2008) and a people-interactive process (Lorange and Vancil, 1976) which could facilitate the delivery of explicit and unambiguous assignments of roles and responsibilities among the employees. In this regard, the empirical finding of this

study demonstrates that the dimension of strategic planning in TQM practices reduces role ambiguity experienced by the employees.

In the present study, customer focus is reported to have a positive relationship with role ambiguity. The result of this study is consistent with the finding of Flaherty *et al.* (1999) in which customer focus (i.e., customer value orientation discrepancy) increased the levels of role ambiguity experienced by the employees. The positive relationship between customer focus and role ambiguity may lie in the nature of the boundary spanning roles, in which employees span the boundary between the organisation and its customers. In this instance, these employees face more uncertainty in their search for the best way to perform their multiple roles (Hartline and Ferrell, 1996), especially when they have to respond to different customer needs and complete job assigned by superiors simultaneously (Hsieh and Yen, 2005). From the results of this study, it is apparent that the dimension of customer focus in TQM practices increases role ambiguity experienced by the employees of ISO-certified organisations in Malaysia as they have to perform boundary spanning roles between the organisation and customers.

The present findings confirm that human resource focus is positively related to role conflict. This is consistent with the findings of Hartline and Ferrell (1996) in which human resource focus (e.g., empowerment) increased role conflict. This notion is supported by Hartline *et al.* (2000), in which they argued that employees cannot be empowered unless the organisation takes steps to relax its organisational structures. This seems to be the case in this study because the practice of empowerment in ISO-certified firms, which rely on standardised rules and procedures, has increased role conflict experienced by the employees. On the other hand, human resource focus has an indirect effect on role ambiguity through role conflict. Since the reward and

recognition systems in TQM-oriented organisations are often aligned to fit a TQM strategy, employees, who have work achievements but have been relatively inactive in TQM-based activities, are likely to be under-evaluated, resulting in higher levels of role conflict. In some instances, it can be difficult fitting in the extra training demands required of TQM which can be a source of role conflict (e.g., between production and development requirements). According to Wellins (1992), training works best when it is arranged over time rather than in a short period. For example, a four- to six- week training schedule becomes difficult for employees, in particular, the production workers who are supposed to be in the shop-floors, instead of attending classes (Wellins, 1992). As a result, these increased conflicting roles and expectations aggravate more ambiguity among the employees about how to perform and prioritise the roles and expectations.

The present study shows that process management is negatively related to role conflict. This is consistent with the past literature (e.g., Johnson *et al.*, 1998; Nicholson and Goh, 1983; Rizzo *et al.*, 1970) that role conflict is reported to be have negatively associated with process management (e.g., formalisation). This is further supported by the notion made by Morris *et al.* (1979) that written rules and procedures on the employees' job proves helpful in reducing conflict among employees such as secretaries and clerical staff whose tasks are routine but the work environment is changing and uncertain with regard to workloads and scheduling. Furthermore, this present study develops a persuasive rationale that the link between process management and role ambiguity is mediated by role conflict. This finding indicates that formalised process management is needed in the work environment to reduce ambiguous authority structures, unclear objectives, and ambiguity in work roles by clarifying and defining job responsibilities.

The result of this study indicates that information analysis is significantly related to lower levels of role conflict. This shows that the firms in this present survey have adequacy of data and information analysis to facilitate decision-making and operation, which in turn, reduce the levels of employees' role conflict. In addition, role conflict is found to be a full mediator in the link between information analysis and role ambiguity. In this regard, the practice of information analysis in these ISO-certified organisations represents the adequacy of information that helps delineation of work role boundaries, resulting in lower levels of role ambiguity. Therefore, this finding indicates that this dimension of TQM (i.e., information analysis) is an important practice, and it is imperative that firms continue the efficient use of information analysis.

7. Implications

7.1 Theoretical implication

Although TQM practices have been a significant source of practice-oriented management prescriptions and have been the subject of a large volume of published research, little is known of the implementation of TQM practices leading to the role conflict and role ambiguity experienced by employees. To date, this is a domain of research and application which has been neglected within the academicians, industrial/organisational (I/O) administrators and managers. As a result, this research contributes by formulating and testing a research model that explains how and why diverse TQM practices have different relationships with role conflict and role ambiguity. Besides extending the current research of TQM, the proposed research model has filled the research gap in the literature of TQM and role stressors.

Furthermore, the use of SEM in this study provides an excellent way to analyse the models simultaneously, assess the mediating effects of role conflict, and

provide multiple fit indices to determine if the hypothesised models are correctly specified. This contribution is important because the simultaneous investigations of different dimensions of TQM practices (i.e. leadership, strategic planning, customer focus, human resource focus, process management and information analysis), role conflict and role ambiguity provides a more comprehensive understanding of the phenomena and advances the current knowledge concerning the interrelationships among six TQM practices, role conflict and role ambiguity.

To our knowledge, none of the studies conducted in the areas of TQM and role stressors research have explored both direct and indirect effects in the relationships among TQM practices, role conflict and role ambiguity. In this regard, the establishment of multidimensional and mediating relationships between the six TQM practices, role conflict and role ambiguity in this study is an important distinction that previous studies have not identified.

7.2 Practical implication

The experience of role conflict and role ambiguity has been a disruptive issue for both individuals and organisations over the years. From a practical perspective, it is important to know which TQM dimensions are significantly associated with role conflict and role ambiguity experienced by the employees. Since the proposed model allows an analysis of independent dimension of TQM (i.e., leadership, strategic planning etc) in relation to role conflict and role ambiguity, the research model of this study serves as a diagnostic tool for the organisational administrators and managers to gain insight into the positive and negative influences of TQM practices on employees' role conflict and role ambiguity. This analysis is certainly important because when the relationships among different TQM practices, role conflict and role ambiguity can be uncovered, the organisational administrators and industrial practitioners will be able

to manage the individual employees' stress behaviour by applying current TQM practices to reduce undesirable role conflict and role ambiguity experienced by employees.

The empirical findings of this study hold significance for industrial practitioners and individuals in five aspects. First, the negative relationships between two TQM practices (i.e., process management and information analysis) and role conflict are encouraging for industrial practitioners. In order to reduce the levels of role conflict among employees, the organisational administrators and managers are encouraged to develop appropriate implementation procedures to enhance the process management as well as to improve efficient use of information analysis. Second, the study demonstrates the value of employing strategic planning in alleviating the levels of role ambiguity experienced by employees. For organisations that are organised into departmental divisions, the management can help nurture this development of strategic planning by creating a system that facilitates a proper top-down and bottom-up linkage of planning and budgeting.

Third, the organisational administrators and managers must be aware of the pressures of human resource focus which causes increased role conflict. In some instances, managers may need to introduce appropriate implementation of human resource focus such as mentoring programs, in which the less seasoned staff are paired with more experienced staff. It is also important for managers to conduct a "workplace redesign", a process in which Wellins (1992) describes that an organisation needs to assess at the nature of its work (e.g., work flow and job design) and its systems (e.g., training, compensation and appraisal), and to incorporate them for maximum productivity and employee satisfaction.

Fourth, the industrial practitioners must be attentive to the pressures of customer focus which increase employees' role ambiguity. Hartline and Ferrell (1996) posited that the use of behaviour-based evaluation gives employees more control over their evaluations, thereby reducing employees' role ambiguity. In this regard, it is recommended that the management could emphasise behavioural criteria in employee evaluations in order to reduce the levels of role ambiguity among the employees. Finally, the organisational administrators and managers must be aware that the presence of role conflict inevitably leads to higher levels of role ambiguity. On the other hand, role conflict appears to be a full mediator influencing human resource focus and role ambiguity, process management and role ambiguity, information analysis and role ambiguity. One effective way to alleviate role ambiguity is to eliminate, if not reduce, the conflicting roles and expectations communicated to an individual.

8. Limitations and Conclusions

The present study has two limitations. First, this study uses cross-sectional data, and thus restricting the strength of causal inferences of the model variables. In fact, a replication of this study could be performed in other geographical regions (e.g., Europe and Asia region) and cultural (e.g., Western and Japanese culture) contexts before generalisation of the results can be widely accepted. Notwithstanding the use of a cross-sectional design, this study provides a strong foundation for future research and longitudinal study. Second, the use of monomethod self-report data may be affected by response bias. However, according to Rupp and Spencer (2006), the inclusion of mediator in the research design reduces the influence of response bias. Last, our study does not take into account attitudinal or behavioural outcomes such as job performance and job satisfaction in the model. Future studies might consider

adding the attitudinal and behavioural outcomes variables in the model to explore the relationships between TQM practices, role stressors, attitudinal and behavioural outcomes.

In conclusion, this study has addressed a significant gap in TQM and role stressors literature. This is done by formulating, examining and establishing a research model linking the multidimensional and mediating relationships between TQM practices, role conflict and role ambiguity experienced by the employees. Given the significant impact of TQM practices on employees' role conflict and role ambiguity, the organisational administrators and managers could apply the current TQM practices, select and fine-tune the right characteristics to reduce the levels of role conflict and role ambiguity, leading to improved well-being and performance of employees. From a practical viewpoint, the emotional, time and resource savings can be significant for the management and the staff. In short, a comprehensive well-managed TQM program is a sine qua non for an organisation in this increasingly competitive business environment.

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Figure 1. Research Framework

