Multidimensional and mediating relationships between TQM, role conflict and role ambiguity: A role theory perspective

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Multidimensional and mediating relationships between TQM, role conflict and role ambiguity: A role theory perspective

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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 a research gap in the literature of TQM and psychological well-being of employees. The inclusion of mediating effects in this study is an important aspect that other studies have not considered.

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. TQM is 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, Choisne, de Grosbois, & Kumar, 2009). Because many of the processes, resources and results of TQM are basically people-oriented, the success of a TQM programme is highly dependent on how employees understand and engage in these people-oriented issues of TQM (Karia & Assari, 2006). Yet research has focused on the consequences of TQM on organisational and financial performance (Tanninen, Puumalainen, & Sandstrom, 2010), effect of TQM practices on employees satisfaction and loyalty (Chang, Chiu, & Chen, 2010). However, one major issue that has not been addressed in the

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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. 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 an insight into the implication of TQM practices on role stressors so as to improve employees’ well-being.

The issue of role conflict and role ambiguity has largely been neglected in TQM research. Some researchers (Boselie & van der Wiele, 2002; Jun, Cai, & Shin, 2006) have studied the impact of TQM on employees’ psychological and behavioural outcomes such as employee satisfaction and intention to leave. Nevertheless, the existing TQM literature has not addressed the question of TQM practices and employees’ role stressors.

Within the organisational psychology literature, some studies examine the consequences of role conflict and role ambiguity on individual behavioural outcomes such as job satisfaction (Newton & Jimmieson, 2008), and intention to quit (Monsen & Boss, 2009). Although the past studies on role stressors have provided useful insights, interest in this study has shifted towards 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 to develop a ‘low stress’ work environment, and helping employees cope with role stressors.

The focus of this study is to formulate, examine and establish a research model linking the multidimensional and mediating relationships between TQM practices, role conflict and role ambiguity.

2. Literature review
2.1 Role theory
Role theory is a sociological study of role development based on a dramaturgical metaphor (Solomon, Surprenant, Czepiel, & Gutman, 1985). According to Young (2007), role theory is often used as a research framework in social science studies to investigate the expected human behaviour in a given situation. According to Biddle (1986), there are five perspectives of role theory, namely: functional role theory, symbolic interactionist role theory, structural role theory, organisational role theory and cognitive role theory. Within these five perspectives of role theory, organisational role theory stresses role development in a 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 & 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 & Dahlgaard, 2002). Although the Malcolm Baldrige National Quality Award (MBNQA) criteria was originally introduced in the USA, several studies have adopted the MBNQA criteria as a set of TQM constructs for studying quality management practices in different countries such as New Zealand (Angell & Corbett, 2009) and Malaysia (Islam, 2007). The MBNQA has several strengths that provide the rationale for its adaptation as the constructs of TQM in this study. First, it codifies the ideology of quality management within a comprehensive framework for evaluating organisational progress (Garvin, 1991). Second, it is a well-accepted framework for operationalising TQM (He, Hill, Wang, & Yue, 2011). Third, the MBNQA was appropriate for manufacturing, service and small-business organisations (Ettorre, 1996). Therefore, the MBNQA criteria appear to be the most appropriate criteria for both manufacturing and service firms which are the focus of this study.

2.3 Role conflict

Role conflict occurs when different expectations impinge concurrently, resulting in ‘dissonance’ for the individual performing 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 (Babin & Boles, 1996; Schaufeli, Bakker, van der Heijden, & Prins, 2009), 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 refers to the perception that an individual lacks information required to perform a job or task, leading one to feel deserted (Onyemah, 2008). In some cases, role ambiguity occurs when an individual is uncertain about the role expectations and has no idea on how to perform the role (Tang & Chang, 2010). 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 the job effectively (Li & Bagger, 2008).

Several researchers (Babin & Boles, 1996; Hartline & Ferrell, 1996; Wetzels, Ruyter, & Lemmink, 1999) have reported that role conflict is found to have a significant and positive effect on role ambiguity. In fact, Michaels, Day, and Joachimsthaler (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. Given that role ambiguity is exacerbated by role conflict, it is hypothesised that:

\[ H1: \text{There is a positive relationship between role conflict and role ambiguity experienced by employees.} \]
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 & Krone, 2009). Leadership is conceptualised in terms of behavioural actions which demonstrate senior management’s personal involvement in the process of quality improvement efforts (Rao, Ragu-Nathan, & Solis, 1997). In previous studies (Babin & Boles, 1996, Michaels et al. 1987), leadership has been recognised as a determinant of role stress.

In fact, reduced incidences 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 the employees’ role ambiguity will be (Zeithaml, Berry, & Parasuraman, 1988). The negative relationship between leadership and role ambiguity has received substantial empirical support by Michaels et al. (1987) and Johnston, Parasuraman, Futrell, and Black (1990). 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 and developing the strategies that manage the acquisition and use of resources to realise these objectives (Kudla, 1980). According to Nordqvist and Melin (2008), there is a need to examine the impact of strategic planning on employees, in particular, how employees respond to the strategy formulation and implementation.

Following Teh, Ooi, and Yong (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 (Albacete-Saez, Fuentes-Fuentes, & Bojica, 2011; Ketokivi & 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 & Bowen, 1994). In some instances, employees may experience greater stress when their standard and formal role requirements are different from customers’ needs (Kennedy & Corliss, 2008). For example, a salesperson experiences role conflict when the requests of a customer and a supervisor are at odds (Babakus, Cravens, Johnston, & Moncrief, 1999), and perhaps some unit-pricing, substitution or delivery policy may need to be violated in order to establish a sale (Boles & Babin, 1994). In a study of customer-contact employees in Taiwan, Hsieh and Yen (2005) concluded that customer participation is found to be positively related to role conflict. In addition, 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. In a similar vein, Flaherty, Dahlstrom, and Skinner (1999) posited that customer value orientation discrepancy induced the employees’ role ambiguity. 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, Papalexandris, Ioannou, and Prastacos (2010), the human resource management of an organisation requires continuous improvement in order to meet and integrate new requirements exemplified by the environment and the 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. 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 & 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 & Tushman, 2002), which is also known as higher levels of formalisation. According to Ravichandran and Rai (2000), formalisation of analysis and design methods, formalisation of reusability, fact-based management and process control are vital for a successful management of the development process. According to Johnson, La France, Meyer, Speyer, and Cox (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 past studies (Nicholson & Goh, 1983; Rizzo, House, & Lirtzman, 1970) which have found a negative relationship between formalisation and role conflict experienced by employees. Nicholson and Goh (1983) reported a negative association between formalisation and role ambiguity of the production workers. This notion is supported by Singh, Verbeke, and Rhoads (1996), in which clear and communicated organisational practices will lower the levels of role ambiguity. Likewise, Johnson et al. (1998) found that formalisation is negatively related to role ambiguity. 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

The TQM programme of an organisation is considered ineffective if there is inadequate dissemination of organisation information (Sureshchandar, Rajendran, & Anantharaman, 2001). Quality improvement initiatives often involve formal data collection and analysis (Issac, Rajendran, & Anantharaman, 2004). At a conceptual level, information and analysis refer to the availability, timeliness and usage of quality-related data at all hierarchical levels in the companies (Rao et al., 1997).

According to Godfrey, Dale, Marchington, and Wilkinson (1997), the status and performance of materials, processes, departments, divisions, teams and individuals can be monitored through data collection and quality measurement systems. 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.

4. Research methodology
4.1 Measures
The six dimensions of TQM practices are assessed using an adapted version of scales developed by Prajogo, Laosirihongthong, Sohal, and Boon-it (2007), Prajogo and Sohal (2006), Samson and Terziiovski (1999), Sohail and Teo (2003) and Zhang, Waszink, and Wijngaard (2000). 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. 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, Shirom, Fried, & Cooper, 2008).

4.2 Samples and procedures

The unit of analysis for this research was individual, that is, the full-time salaried employees of ISO 9001:2000 certified organisations in Malaysia. The questionnaires were distributed to 100 ISO-certified firms listed in the Federation of Malaysian Manufacturers (FMM) Directory (2007). The FMM directory is recognised as the voice of the industry (Federation of Malaysian Manufacturers [FMM], 2011). FMM was established in 1968 and is the largest private sector economic organisation in Malaysia representing more than 2000 manufacturing and industrial service companies of varying sizes (FMM, 2011). The firms sampled from FMM Directory (2007) included both manufacturing and service firms. However, two firms declined to take part in the survey. Therefore, the sample was collected from 98 organisations; 35 are manufacturing firms and 63 service firms. A stratified random sampling method was used in this study.

A total of 650 questionnaires were distributed and 453 were completed and returned. Of the 453, 31 questionnaires are excluded as 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.

5. Data analysis

5.1 Scale validation

In this study, structural equation modelling (SEM) is used to examine the relationship among constructs. The application of SEM is executed using the Statistical Package for the Social Sciences 11.5 and Analysis of Moment Structures 16.0.
Harman’s single factor test was used to check for common method bias and showed that the problem of common method bias is not substantial in the study. The composite reliabilities of all latent constructs are showed in Table 2. Table 2 also 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 strong evidence for reliability and discriminant validity among the measures.

5.2 Measurement and structural models

Model fit indices are taken into account to confirm the model fit to the data. 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 (Table 3).

Table 2. Correlations and composite reliabilities for all variables.

<table>
<thead>
<tr>
<th></th>
<th>LD</th>
<th>SP</th>
<th>CF</th>
<th>HR</th>
<th>PM</th>
<th>IA</th>
<th>RC</th>
<th>RA</th>
</tr>
</thead>
<tbody>
<tr>
<td>LD</td>
<td>0.864</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SP</td>
<td>0.729**</td>
<td>0.861</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CF</td>
<td>0.502**</td>
<td>0.711**</td>
<td>0.839</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HR</td>
<td>0.646**</td>
<td>0.699**</td>
<td>0.594**</td>
<td>0.894</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PM</td>
<td>0.640**</td>
<td>0.735**</td>
<td>0.651**</td>
<td>0.754**</td>
<td>0.852</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IA</td>
<td>0.588**</td>
<td>0.699**</td>
<td>0.649**</td>
<td>0.671**</td>
<td>0.734**</td>
<td>0.875</td>
<td></td>
<td></td>
</tr>
<tr>
<td>RC</td>
<td>-0.293**</td>
<td>-0.322**</td>
<td>-0.294**</td>
<td>-0.263**</td>
<td>-0.361**</td>
<td>-0.373**</td>
<td>0.668</td>
<td></td>
</tr>
<tr>
<td>RA</td>
<td>-0.377**</td>
<td>-0.442**</td>
<td>-0.343**</td>
<td>-0.366**</td>
<td>-0.456**</td>
<td>-0.428**</td>
<td>0.591**</td>
<td>0.761</td>
</tr>
</tbody>
</table>

Notes: N = 422. Numbers in parentheses are standard errors. Composite reliabilities in bold are shown on the main diagonal; LD, leadership; SP, strategic planning; CF, customer focus; HR, human resource focus; PM, process management; IA, information analysis; RC, role conflict; RA, role ambiguity.

**p < 0.01.

Table 3. Model fit indices for the measurement and structural models.

<table>
<thead>
<tr>
<th></th>
<th>( \chi^2 / \text{d.f.} )</th>
<th>GFI ( \geq 0.80^b )</th>
<th>AGFI ( \geq 0.80^b )</th>
<th>RMSEA ( \leq 0.05^c )</th>
<th>NFI ( \geq 0.80^b )</th>
<th>CFI ( \geq 0.90^d )</th>
<th>TLI ( \geq 0.90^e )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement model</td>
<td>1.655</td>
<td>0.882</td>
<td>0.861</td>
<td>0.039</td>
<td>0.887</td>
<td>0.952</td>
<td>0.946</td>
</tr>
<tr>
<td>Structural model 1</td>
<td>1.578</td>
<td>0.874</td>
<td>0.854</td>
<td>0.037</td>
<td>0.870</td>
<td>0.948</td>
<td>0.942</td>
</tr>
<tr>
<td>Structural model 2</td>
<td>1.598</td>
<td>0.866</td>
<td>0.845</td>
<td>0.038</td>
<td>0.862</td>
<td>0.943</td>
<td>0.937</td>
</tr>
<tr>
<td>Structural model 3</td>
<td>1.538</td>
<td>0.858</td>
<td>0.838</td>
<td>0.036</td>
<td>0.847</td>
<td>0.940</td>
<td>0.934</td>
</tr>
</tbody>
</table>

Notes: \( \chi^2 / \text{d.f.} \), normed chi-square; GFI, goodness-of-fit index; AGFI, adjusted goodness-of-fit index; RMSEA, root mean square error of approximation; NFI, normed fit index; CFI, comparative fit index; TLI, Tucker Lewis index.

\(^a\)Desirable range recommended by Chau and Hu (2001).

\(^b\)Desirable range recommended by Forza and Filippini (1998).

\(^c\)Desirable range recommended by Browne and Cudeck (1993).

\(^d\)Desirable range recommended by Hair, Black, Babin, and Anderson (2010).

\(^e\)Desirable range recommended by Vandenberg and Sarstedt (2003).
As shown in Table 4, the hypothesis testing results of structural model 3 have shown that strategic planning ($b = -0.351, p < 0.10$) is reported to have a significant and negative relationship with role ambiguity. Customer focus ($b = 0.220, p < 0.05$) and role conflict ($b = 0.752, p < 0.001$) are found to have a significant and positive relationship with role ambiguity. Human resource focus ($b = 0.242, p < 0.01$) is positively related to role conflict. Process management ($b = -0.356, p < 0.05$) and information analysis ($b = -0.282, p < 0.01$) 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. Path coefficients for structural model 3 (structural model of TQM practices, role conflict and role ambiguity).

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Causal path</th>
<th>Path coefficients</th>
<th>Critical ratios</th>
<th>$p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>$H1$</td>
<td>RC $\rightarrow$ RA</td>
<td>0.752</td>
<td>6.070</td>
<td>0.000***</td>
</tr>
<tr>
<td>$H2a$</td>
<td>LD $\rightarrow$ RC</td>
<td>-0.140</td>
<td>-1.270</td>
<td>0.204</td>
</tr>
<tr>
<td>$H2b$</td>
<td>LD $\rightarrow$ RA</td>
<td>0.102</td>
<td>1.072</td>
<td>0.284</td>
</tr>
<tr>
<td>$H3a$</td>
<td>SP $\rightarrow$ RC</td>
<td>0.154</td>
<td>0.685</td>
<td>0.493</td>
</tr>
<tr>
<td>$H3b$</td>
<td>SP $\rightarrow$ RA</td>
<td>-0.351</td>
<td>-1.784</td>
<td>0.074†</td>
</tr>
<tr>
<td>$H4a$</td>
<td>CF $\rightarrow$ RC</td>
<td>-0.022</td>
<td>-0.175</td>
<td>0.861</td>
</tr>
<tr>
<td>$H4b$</td>
<td>CF $\rightarrow$ RA</td>
<td>0.220</td>
<td>1.974</td>
<td>0.048*</td>
</tr>
<tr>
<td>$H5a$</td>
<td>HR $\rightarrow$ RC</td>
<td>0.242</td>
<td>2.949</td>
<td>0.003**</td>
</tr>
<tr>
<td>$H5b$</td>
<td>HR $\rightarrow$ RA</td>
<td>0.045</td>
<td>0.647</td>
<td>0.518</td>
</tr>
<tr>
<td>$H6a$</td>
<td>PM $\rightarrow$ RC</td>
<td>-0.356</td>
<td>-2.572</td>
<td>0.010*</td>
</tr>
<tr>
<td>$H6b$</td>
<td>PM $\rightarrow$ RA</td>
<td>-0.166</td>
<td>-1.410</td>
<td>0.159</td>
</tr>
<tr>
<td>$H7a$</td>
<td>IA $\rightarrow$ RC</td>
<td>-0.282</td>
<td>-3.049</td>
<td>0.002**</td>
</tr>
<tr>
<td>$H7b$</td>
<td>IA $\rightarrow$ RA</td>
<td>0.028</td>
<td>0.362</td>
<td>0.717</td>
</tr>
</tbody>
</table>

Notes: LD, leadership; SP, strategic planning; CF, customer focus; HR, human resource focus; PM, process management; IA, information analysis; RC, role conflict; RA, role ambiguity.

†$p < 0.10$.

* $p < 0.05$.

** $p < 0.01$.

*** $p < 0.001$.

As shown in Table 4, the hypothesis testing results of structural model 3 have shown that strategic planning ($\beta = -0.351, p < 0.10$) is reported to have a significant and negative relationship with role ambiguity. Customer focus ($\beta = 0.220, p < 0.05$) and role conflict ($\beta = 0.752, p < 0.001$) are found to have a significant and positive relationship with role ambiguity. Human resource focus ($\beta = 0.242, p < 0.01$) is positively related to role conflict. Process management ($\beta = -0.356, p < 0.05$) and information analysis ($\beta = -0.282, p < 0.01$) 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.

### 5.3 Mediation model

The Baron and Kenny (1986) statistic is used to test for the significance of the mediating effect. 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.

### 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 past studies...
The result of this study implies that the greater the conflict an employee perceives in his role, the more the individual employee will experience role ambiguity. The present findings confirm that strategic planning is significant in reducing the employees’ role ambiguity. This result suggests that strategic planning is a people-interactive process (Lorange & Vancil, 1976) which could facilitate the delivery of explicit and unambiguous assignments of roles and responsibilities among the employees.

Customer focus is reported to have a positive relationship with role ambiguity. The result of this study is consistent with the findings of Flaherty et al. (1999) in which customer focus (i.e. customer value orientation discrepancy) increases 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 & Ferrell, 1996), especially when they have to respond to different customer needs and simultaneously complete jobs assigned by superiors (Hsieh & 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) is found to have increased role conflict.

<table>
<thead>
<tr>
<th>Constructs (hypotheses)</th>
<th>Baron and Kenny (1986) test statistic</th>
<th>Coefficients of SM 1 (IV → Mediator)</th>
<th>Coefficients of SM 2 (IV → DV)</th>
<th>Coefficients of SM 3 (IV → DV, mediator controlled)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Leadership (H2c)</td>
<td>-1.230</td>
<td>-0.134</td>
<td>-0.004</td>
<td>0.102</td>
</tr>
<tr>
<td>Strategic planning (H3c)</td>
<td>0.671</td>
<td>0.151</td>
<td>-0.233</td>
<td>-0.351†</td>
</tr>
<tr>
<td>Customer focus (H4c)</td>
<td>-0.170</td>
<td>-0.018</td>
<td>0.198†</td>
<td>0.220*</td>
</tr>
<tr>
<td>Human resource focus (H5c)</td>
<td>2.625**</td>
<td>0.232**</td>
<td>0.216**</td>
<td>0.045</td>
</tr>
<tr>
<td>Process management (H6c)</td>
<td>-2.347**</td>
<td>-0.352*</td>
<td>-0.416***</td>
<td>-0.166</td>
</tr>
<tr>
<td>Information analysis (H7c)</td>
<td>-2.683**</td>
<td>-0.276**</td>
<td>-0.169*</td>
<td>0.028</td>
</tr>
<tr>
<td>Role conflict (H1)</td>
<td>Nil</td>
<td>Nil</td>
<td>Nil</td>
<td>0.752***</td>
</tr>
</tbody>
</table>

Notes: SM, structural model; Mediator, role conflict; DV, role ambiguity; IV, independent variables.

†p < 0.10.
*p < 0.05.
**p < 0.01.
***p < 0.001.
notion is supported by Hartline, Maxham, and McKee (2000), who argued that employees cannot be empowered unless the organisation takes steps to relax its organisational structures. This seems to be the case in our present 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 to fit in the extra training demands required of TQM which can be a source of role conflict (e.g. between production and development requirements). As a result, these increased conflicting roles and expectations aggravate the ambiguity among the employees about how to perform and prioritise the roles and expectations.

This study shows that process management is negatively related to role conflict. This is consistent with the past literature (Johnson et al., 1998; Nicholson & Goh, 1983; Rizzo et al., 1970) that role conflict is reported to be have become negatively associated with process management (e.g. formalisation). Morris, Steers, and Koch (1979) also suggested that written rules and procedures regarding the staff’s job proves helpful in decreasing conflict among staff 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 study explains 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.

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 has been reported about the implementation of TQM practices leading to the role conflict and role ambiguity experienced by employees. 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 a significant research gap in the literature of TQM and role stressors.

Furthermore, the use of SEM in this study allows the simultaneous investigation of different dimensions of TQM practices, role conflict and role ambiguity, provides a more comprehensive understanding of the phenomena and advances the current knowledge concerning the interrelationships among the 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 implications

The experiences of role conflict and role ambiguity have been a disruptive influence 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. The proposed model can serve 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. The findings of this study allow the organisational administrators and industrial practitioners 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, in order to reduce the levels of role conflict among employees, the organisational administrators and managers are required to develop appropriate implementation procedures to enhance the process management as well as to improve efficient use of information analysis. Second, this 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 cause increased role conflict. In some instances, managers may need to introduce appropriate implementation of human resource focus such as mentoring programmes, in which less-experienced staff are paired with more seasoned staff. It is also important for managers to conduct a ‘workplace redesign’, a process in which Wellsins (1992) describes that an organisation needs to assess 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

This study has two limitations. First, this study uses cross-sectional data, thus restricting the strength of causal inferences of the model variables. Second, the use of monomethod self-report data may be affected by 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.

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References


