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National culture, organisational culture, total quality management implementation, and performance: an empirical investigation

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Abstract: National and organisational cultures can affect the degree of success of total quality management (TQM) implementation and organisational performance; therefore, it is important to further study their effects on Indonesian companies. We studied several Indonesian companies that have implemented TQM or ISO systems, and 129 questionnaires were answered by employees at the senior executive, general manager, quality manager, and managerial levels. Results suggest that a relationship exists between national and organisational cultures, and that they influence TQM implementation and performance. While there was no significant cultural difference between the companies, the implementation and organisational performance differed significantly. Thus, this study provides important practical knowledge for Indonesian practitioners and academics to better understand the TQM implementation process.

Keywords: national culture; organisational culture; organisational performance; total quality management; TQM; Indonesian companies.

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1 Introduction

Production quality and service excellence are critical requirements for companies to expand their market share and survive in a competitive global marketplace. Beginning in the late 1980s, modern industries began to implement new styles of management systems to achieve these goals, and total quality management (TQM) is one such approach.

TQM is an efficient and effective method for improving organisational performance, and there is a positive correlation between quality management practices and company performance indicators such as customer satisfaction, employee relationships, operating procedures, and financial results (Juran, 1989). Talib and Rahman (2012) suggest that top management commitment, customer focus and satisfaction, human resource management, training, and education are the most important TQM practices for manufacturing and service organisations. Abusa and Gibson (2013) found process management and top management commitment to be the TQM elements having most impact on organisational performance in Libyan industries. Fotopoulos and Psomas (2010) found that TQM factors such as the quality practices of top management, employee involvement in the quality management system, customer focus, process and data quality management, and quality tools and implementation techniques significantly affected companies' performance in Greece.

Cross-cultural studies have shown that cultural values play an important role in international operations and an organisation's management practices (Flynn and Saladin, 2006; Hofstede et al., 2010; Kull and Wacker, 2010). Differences in national cultures may require different management practices, and organisational culture is recognised as an important determinant of quality management success and organisational performance (Naor et al., 2008; Prajogo and McDermott, 2005, 2011). However, it takes time, at least six years in many cases, to achieve significant changes in organisational culture (Ishikawa, 1985). Many companies fail to successfully implement TQM because they do not recognise that the implementation may seem to go against the direction, values, and culture of their company and employees (Cameron and Quinn, 1999). Therefore, national and organisational cultures can determine the degree of success or failure for TQM implementation (Aziz and Morita, 2013; Sadeghian, 2010). Changing the organisational culture to match the TQM approach is vital for a successful TQM implementation.

Owing to a lack of empirical studies, it is difficult for companies to obtain sufficient information to support their TQM implementation practices. Moreover, studies on TQM in Indonesia have not considered the impact of culture on TQM. Furthermore, Indonesian managers' knowledge about the variables affecting TQM implementation is not adequate. Because of these issues, many Indonesian companies still perform inadequately despite having implemented TQM systems.

For these reasons, this study aims to investigate the interplay between national and organisational cultures and TQM implementation and how TQM affects organisational performance in Indonesia. A comparative analysis of TQM and TQM-ISO companies was conducted on the cultural factors influencing TQM implementation and organisational performance. Since achieving an ISO certification is a strategy used in TQM development, the ISO system served as the basic framework for the implementation process.

2 Literature review

2.1 National culture

Hofstede et al. (2010) is internationally recognised for developing the first empirical model of the dimensions of national culture. Hofstede's framework is based on the assumption that people are guided and driven by different attitudes, beliefs, moralities, customs, and ethical standards. The values that differ between cultures can be grouped into four clusters: power distance, collectivism, uncertainty avoidance, and masculinity. After conducting an international study of Chinese employees and managers, Hofstede added a fifth dimension: long-term orientation. Hofstede's five dimensions of national culture areas follows:

- *Power distance* – Power distance expresses the degree to which the less powerful members of a society accept and expect that power will be distributed unequally (Hofstede et al., 2010). In countries with a significant degree of power distance, employees believe that their supervisors are always right and regard skirting the rules as disobedient and defiant.
- *Collectivism* – Collectivism is the degree to which people act as group members. In collectivist cultures, more emphasis is placed on societal duty and group interests. The relationship between individuals in the workplace is typically very close, and the individual can expect a high degree of loyalty from their group members.
- *Uncertainty avoidance* – Uncertainty avoidance is the degree to which people feel threatened and uncomfortable with ambiguity when it comes to assessing future possibilities. Societies with high uncertainty avoidance are likely to have more empowered planning and organisational structures.
- *Masculinity* – Masculinity represents a society's preference for achievement, heroism, assertiveness, material reward for success, and competition. In masculine societies, employees get clear guidance and firm control from management and are motivated by high earnings and the prospect of a challenging career.
- *Long-term orientation* – Long-term orientation can be interpreted as a society's search for virtue. Societies with long-term orientation believe that the truth depends very much on the situation, context, and time. They show thriftiness, an ability to adapt to changing conditions, and perseverance in achieving results.

2.2 Organisational culture

Organisational culture is defined as the values, beliefs, and hidden assumptions that organisational members share (Cameron and Quinn, 1999). Cameron and Quinn (1999) built the competing values framework (CVF) model of organisational culture which was developed based on research on the major indicators of effective organisations. The CVF is one of the most extensive models and has been used in empirical studies on organisational culture (Naranjo-Valencia et al., 2011). This framework was developed according to two main dimensions: flexibility as opposed to stability, and internal as opposed to external focus. Plotted on a Cartesian plane, these dimensions give rise to four main quadrants, each of which represents a dominant culture type: clan, adhocracy,

market, or hierarchy (Figure 1). In addition, the Organizational Culture Assessment Instrument (OCAI) can be used to place a culture into one of these quadrants depending on its values, assumptions, interpretations, and approaches. These four culture types are as follows:

- *Clan* – Clan organisations maintain an internal focus and concentrate on flexibility and discretion. They are generally seen as friendly places to work, where employees share a lot about themselves. Clan cultures value cohesiveness, cooperation, and teamwork. Loyalty, tradition, and commitment are strong in such organisations. Success is described in terms of quality internal conditions and of having met the concerns of those who interact with the company.
- *Adhocracy* – Adhocracies maintain an external focus and concentrate on flexibility. Organisational managers are typically seen as innovators, entrepreneurs, and visionaries. Adhocracies seek to generate profit using new resources and refining processes; success, however, is measured in terms of creating unique products and services, taking risks and anticipating the future.
- *Hierarchy* – Hierarchies maintain an internal focus and concentrate on stability. Such organisations have a clear organisational structure, standardised operating procedures, and strict control. They focus on internal maintenance and integrate new policies carefully. Hierarchies stress predictability, clearly-defined goals and efficient use of resources.
- *Market* – Market organisations maintain an external focus and concentrate on stability. Market-driven companies concentrate on transactions with the external environment and on leveraging advantages over competitors. They make it their goal to earn profits through success in the marketplace.

2.3 TQM implementation constructs

While there are many studies on TQM implementation (Ahire et al., 1996; Al-Hawary and Abu-Laimon, 2013; Das et al., 2008; Flynn et al., 1994; Fotopoulos and Psomas, 2010; Malik et al., 2013; Morrow, 1997; Saraph et al., 1989; Zhang et al., 2000, etc.), there is still no generally accepted standard for the construction of TQM. Saraph et al. (1989) initiated an empirical approach to examining TQM implementation and synthesised literature about quality by identifying eight quality management factors in a business unit.

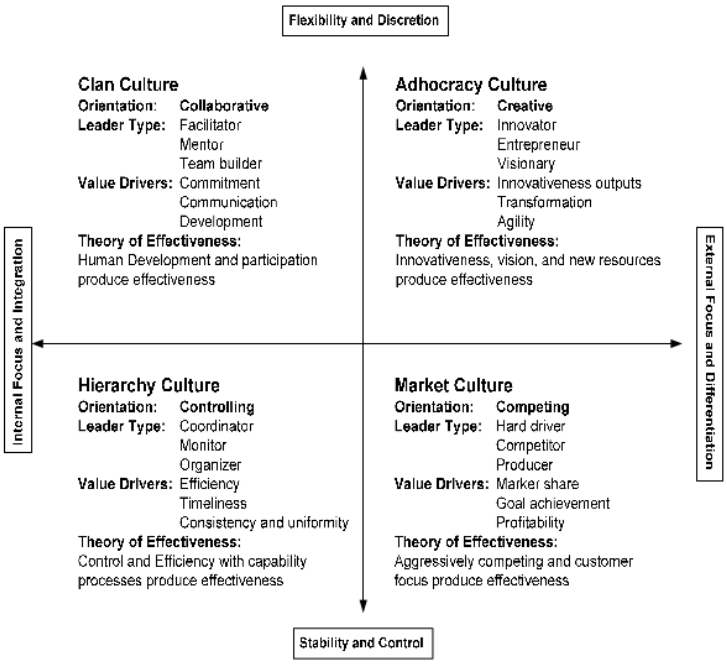
Valmohammadi (2011) developed constructs and a measurement instrument of TQM for Iranian manufacturing small to medium-sized enterprises (SMEs). This was used to examine the effects of TQM on organisational performance. Their TQM constructs differed from Saraph et al. (1989), and their results showed that leadership plays an important role in improving performance.

Malik et al. (2013) analysed and ranked the TQM practice activities, critical success factors, barriers, and business outcomes in the Pakistan electric fan manufacturing industry according to company size and ISO-9000 certification status. The results detailed eight management practices and demonstrated that large sized and ISO-9000 certified firms were more actively involved in TQM practices and activities.

Parast et al. (2011) empirically investigated the effects of quality management practices on operational and business performance. They developed 11 quality

management constructs and their results indicated that top management support, employee training, and employee involvement significantly explained the variability of operational performance.

Figure 1 CVF of organisational culture



Source: Cameron and Quinn (1999)

Al-Refaie and Hanayneh (2014) investigated the influences of TQM, total productive maintenance (TPM), and Six Sigma practices on firms' performance in Jordan. Their results showed significant positive effects of TPM and TQM on performance. However, Six Sigma practices were still deficient in improving performance.

Al-Hawary and Abu-Laimon (2013) assessed the impacts of TQM practices on service quality in Jordan cellular communication companies. Their results showed that the leadership, information and analysis, customer focus, continuous improvement, and supplier quality management had positive effects on service quality.

Miyagawa and Yoshida (2010) examined the relationship between TQM practices and the business performance of Japanese-owned manufacturers in the USA. Their results indicated that TQM practices significantly influenced the overall company performance.

After a comprehensive review of existing literature, it appears that each researcher has developed their own constructs, measurements, and descriptions of TQM based on their specific needs and interests. Thus, we propose ten constructs as the primary TQM elements for Indonesian companies. Each element is as follows:

- *Leadership* – Top-level management plays an important role in goal achievement by providing and using the tools and materials needed to communicate values and systems. The responsibilities of management also include creating goals and strategies for quality improvement and pursuing long-term business success (Zhang et al., 2000). In terms of quality management, a strong commitment from top-level management is critical.
- *Vision and plan statement* – A vision and plan statement describes how a company wants to be seen (Zhang, 2000). A vision that is articulated clearly to employees can help them realise how they can contribute and can motivate them to work towards improving quality.
- *Customer focus* – The future success of a company is largely dictated by how much satisfaction it can provide its customers. A close relationship with customers is necessary to determine their needs and acquire feedback on the extent to which those needs are being met (Das et al., 2008).
- *Education and training* – The education and training of employees in concepts related to quality is essential to their overall understanding of quality (Ahire et al., 1996). Education and training are two of the most significant elements in successful TQM implementation.
- *Benchmarking* – Companies need to continuously benchmark their products and processes in order to understand where they stand with respect to internal and external standards and fully meet customer requirements. Benchmarking includes analysing the best products and processes of leading competitors in the same industry or in other industries that use similar processes (Ahire et al., 1996).
- *Teamwork* – Establishing coordinated teamwork helps solve problems, create empathy, manage change, implement plans, and generate a sense of involvement. Solutions created collectively are thought to be better and more creative, and they foster more commitment to the ultimate outcome (Morrow, 1997).
- *Continuous improvement process* – A commitment to improvement is a relentless effort towards better product management, better internal processes, competitiveness, and benchmarking. A commitment to continuous improvement is ideally recognised at all levels.
- *Employee involvement* – Employees involved in the quality improvement process acquire new knowledge, realise the benefits of quality, and obtain a sense of accomplishment (Zhang et al., 2000). Employees should be encouraged to offer suggestions for quality improvement.
- *Supplier quality management* – Developing a long-term cooperative relationship with suppliers, participating regularly in supplier activities, and giving feedback on the performance of suppliers' products are necessary to ensure the continuous supply of raw materials with the required quality (Zhang et al., 2000).
- *Recognition and reward* – Recognition and rewards are required for improved performance by any individual, team, division, or department. These activities

should stimulate employee commitment to improving the quality of products or services. Working condition improvements, salary or position promotions, and financial awards are suitable methods for recognition and reward (Zhang et al., 2000).

2.4 Organisational performance

Organisational performance comprises the actual output or results of an organisation as measured against its goals and objectives (Richard et al., 2009). Measuring performance is a critical factor in improving performance; it helps to create goals and plan future strategies. However, there are no suggestions in the current literature for how to measure organisational performance.

Various researchers have analysed the impact of TQM practices on organisational performance (Fotopoulos and Psomas, 2010; Fuentes-Fuentes et al., 2004; Sadeghian, 2010; Salaheldin, 2009), and concluded that TQM implementation had a significant impact on organisational performance.

In this study, performance is measured in two dimensions: financial and non-financial. Financial performance is measured by fiscal criteria such as return on assets, net income to revenue ratio, revenue development, and net earnings. Non-financial performance criteria are secondary measurements, and include market share, customer satisfaction, product/service defects or failures, customer complaints, employee satisfaction, employee turnover, and reputation among major customer segments. The performance measures suggested by Fuentes-Fuentes et al. (2004) and Salaheldin (2009) are used to measure performance in this study.

2.5 Culture, TQM, and performance

It is important to understand the national and organisational cultures underlying a company before implementing TQM because change may require learning and adapting to new approaches. Cultural change can be initiated by top management (Trice and Beyer, 1993), and leaders must focus on the organisation's objectives as they implement appropriate strategies to change culture.

Flynn and Saladin (2006) examined the relationship between the Baldrige constructs and Hofstede's national cultural dimensions. Their results show that higher levels of uncertainty avoidance, power distance, collectivism, and masculinity support the success of the Baldrige constructs. Mardani and Kazemilari (2012) observed a relationship between national culture and TQM implementation in Iran. They investigated the impact of national culture as determined by Hofstede's cultural dimensions on TQM implementation, and found that power distance, long-term orientation, and individualism are the most critical elements for TQM implementation. Kull and Wacker (2010) determined that cultural values can moderate the effect of quality management on quality performance, and national and organisational cultures can determine the difference between success and failure in TQM implementation. Al-Khalifa and Aspinwall (2000), and Sadeghian (2010) found that the clan and adhocracy cultures are the most promising for successful TQM implementation. Prajogo and McDermott (2011) examined the relationship between the four cultural dimensions of the CVF and performance and found that an adhocracy culture was the strongest predictor of the performance measures.

2.6 TQM Implementation in Indonesia

TQM was first recognised in 1980 (Aroef, 1999). Numerous multinational companies, such as the joint Japanese-Indonesian ventures and Japanese companies with branches in Indonesia were particularly influential in introducing this concept. The initiative started with workshops on quality management, quality assurance, and quality control circle (QCC) activities. The first company to consciously cultivate a quality management culture in Indonesia was Astra International, a Japanese-Indonesian joint venture. On 1 March 1985, the Indonesian Quality Management Association was established with the responsibility to cooperate with governmental agencies to disseminate TQM information to improve national productivity. Simultaneously, many employees received education and training on TQM.

Recently, many Indonesian companies have implemented TQM. However, some of these companies still lack adequate TQM systems. Consequently, TQM is not well defined in Indonesia and its use is sometimes obscure. To improve quality systems and take steps towards TQM implementation, most Indonesia companies have implemented ISO 9000. The major TQM implementation practices in Indonesian companies can be summarised as follows: statistical process control, the seven basic tools of quality control (QC), QCC activities, self-assessment, quality inspection, quality departments, cause and effect studies, and internal audits.

3 Research objective and methodology

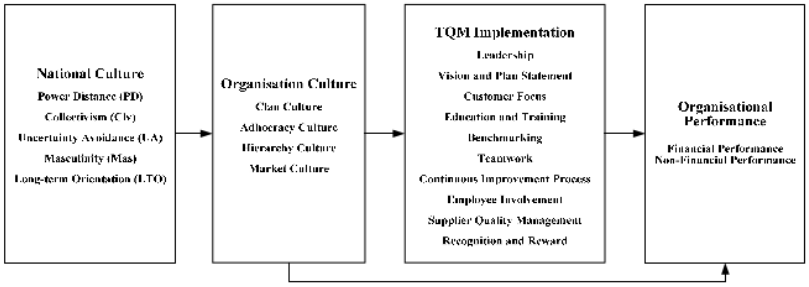
Based on the above literature review, we developed a research framework to examine the extent to which the five constructs of Hofstede et al.'s (2010) national culture, four constructs of Cameron and Quinn's (1999) organisational culture, and our ten constructs of TQM implementation exist in Indonesian companies, and to investigate the relationships between culture and TQM implementation and organisational performance by measuring the financial and non-financial performance. The proposed research framework is depicted in Figure 2. This research model suggests that the more the culture affects TQM implementation, the more the organisational performance of Indonesian companies will be improved by TQM implementation. In this theoretical research framework, the independent variables are national and organisational culture and TQM implementation, and the dependent variables are organisational culture, TQM implementation, and performance.

The objectives of this study are to investigate the relationship between national culture and organisational culture, the relationship of organisational culture on TQM and organisational performance, the relationship of TQM implementation on organisational performance, and to examine the difference in organisational culture, TQM implementation, and organisational performance between TQM and TQM-ISO companies.

Based on the research objectives and research framework described in Figure 2, we developed seven hypotheses. The first hypothesis examines the relationship between the five dimensions of national culture (power distance, uncertainty avoidance, masculinity, collectivism, and long-term orientation) and organisational culture. Previous researchers have used Hofstede dimensions to assess national culture (Sadeghian, 2010; Wu, 2006;

Flynn and Saladin, 2006; Irianto, 2005), and have found thatnational culture has significant effects on organisational culture in both Iran and the UK (Sadeghian, 2010).

Figure 2 Research framework



H1 National culture significantly affects organisational culture.

The second and third hypotheses address the relationship between the four dimensions of organisational culture (clan culture, adhocracy culture, hierarchy culture, and market culture), TQM implementation, and two variables of organisational performance. Prajogo and McDermott (2011) used the four cultural dimensions of the CVF to examine the relationship between organisational culture and performance. Haffar et al. (2013) found adhocracy and clan cultures tend to be the most supportive cultures for the implementation of TQM practices.

H2 Organisational culture significantly affects TQM implementation.

H3 Organisational culture significantly affects organisational performance.

The fourth hypothesis investigates the relationship between the ten constructs of TQM implementation on two variables of organisational performance. Parast et al. (2011) found that top management support, employee training, and employee involvement have significant effects on organisational performance. Thus, TQM significantly influence overall company performance (Miyagawa and Yoshida, 2010).

H4 TQM implementation significantly affects organisational performance.

The fifth, sixth, and seventh hypotheses investigate the difference in organisational culture, TQM implementation, and organisational performance between TQM and TQM-ISO companies. Previous researchers (Malik et al., 2013; Martínez-Costa et al., 2008) conducted comparative analysis of TQM implementation and performance between ISO and non-ISO firms. Their results showed that companies with ISO certification have better value.

H5 Organisational culture is significantly different between TQM and TQM-ISO companies.

H6 TQM implementation is significantly different between TQM and TQM-ISO companies.

H7 Organisational performance is significantly different between TQM and TQM-ISO companies.

The survey was designed to measure the 21 constructs using models based on the following research. The national cultures variables were assessed using the instruments of Wu (2006) and Irianto (2005). The organisational cultures were evaluated on the basis of the OCAI, as developed by Cameron and Quinn (1999). TQM implementation was judged using the instruments of Saraph et al. (1989), Das et al. (2008), Zhang et al. (2000), and Morrow (1997). Company performance evaluations were based on the studies of Salaheldin (2009) and Fuentes-Fuentes et al. (2004). We investigated national culture, organisational culture, TQM implementation, and performance of Indonesian companies. Company employee respondents expressed their agreement or disagreement with statements using a five-point Likert-scale: 1 – strongly disagree, 2 – disagree, 3 – undecided, 4 – agree, and 5 – strongly agree.

This study used a postal survey and the population of the survey was the companies in Lampung province in Indonesia that have implemented TQM or are ISO certified. The company information was obtained from the Lampung Provincial Statistics Bureau. In the Lampung province, there are several large and medium companies. Before distributing questionnaires, managers were interviewed over the phone. In addition to perceptual questions, we asked whether the company had implemented a TQM or an ISO system (ISO certified), and, if so, when was it implemented. The respondents were required to have some knowledge of the implementation of the TQM or ISO system. The number of qualifying companies was determined based on the information received. Three hundred questionnaires were sent to senior executives, general managers, quality managers, managers, and ordinary employees of these firms. A total of 136 questionnaires were eventually returned, a response rate of 45.333%. After data analysis, 129 questionnaires were complete and able to be used. The breakdown of the respondents' profiles is shown in Table 1.

For data analysis, IBM-SPSS version 21 was used. Reliable and valid factors were identified. Multiple regression and one-way ANOVA were conducted to investigate national culture, organisational culture, TQM implementation, and organisational performance. The analysis of the relationships was generally based on correlation coefficients; however, in this study, t-values with two-tailed tests were used for testing our hypotheses, similar to other studies (Miyagawa and Yoshida, 2010; Sadeghian, 2010; Malik et al., 2010). Several researchers have used one-way ANOVA to compare the differences in variables (Karim et al., 2008; Martínez-Costa et al., 2008; Malik et al., 2013). Thus, one-way ANOVA tests were used to compare mean variable factor scores between TQM and TQM-ISO companies.

An analysis of the reliability and validity of our questionnaires was performed to evaluate the measurement instruments of the individual scales. Reliability measures the extent to which an experiment, test, or any measuring procedure yields the same results in repeated trials (Carmines and Zeller, 1979). Internal consistency is most commonly denoted by Cronbach's alpha (α) coefficient (Nunnally, 1978). Reliability tests using Cronbach's alpha test were conducted, and the results are shown in Table 2. The alpha coefficients for the 21 constructs ranged from a minimum of 0.714 to a maximum of 0.936, indicating high reliability of the instrument. Reliability coefficients of 0.70 or more are considered good (Nunnally, 1978).

Table 1 Profiles of the respondents by job position, industry, and quality system

Job position	*Frequency*	*Percentage (%)*
CEO/GM/Director	6	4.65
Engineering Department Manager	3	2.33
Production Manager	8	6.20
HRD Manager	10	7.75
Supervisor	59	45.74
Branch Manager	16	12.40
Head of Division	8	6.20
Marketing Manager	1	0.78
Others	18	13.95
Industry	*Frequency*	*Percentage (%)*
Food industry	44	34.11
Chemical and petrochemical	7	5.43
Agribusiness industry	4	3.10
Media industry	18	13.95
Electrical and electronic industry	5	3.88
Building and civil construction	20	15.50
Trading industry	11	8.53
Others	20	15.50
Quality system	*Frequency*	*Percentage (%)*
TQM-ISO Companies	70	54.3
TQM Companies	59	45.7

Validity is the extent to which an instrument measures what it intends to measure. The three most popular methods of evaluating the validity of a measurement instrument are content validity, criterion-related validity, and construct validity (Carmines and Zeller, 1979). The construct validity can be evaluated using factor analysis, which analyses the inter-relationships among a large number of variables and can be explained in terms of their common underlying dimensions (constructs). The general purpose of factor analysis is to condense or summarise information into a smaller set of new composite dimensions with a minimum loss of information (Hair et al., 2006). The factor analysis results illustrated in Table 2 show that all 21 constructs form a single factor and have eigenvalues greater than one. Factors having eigenvalues greater than one are considered significant; all factors with eigenvalues less than one are considered insignificant and are disregarded. For each of the 21 constructs, the factor loadings were over 0.506, except for item 4 for the construct power distance, which had a factor loading of less than 0.50. In this study, 0.50 was the cut-off point for factor loading, so anything with a factor loading less than 0.50 was excluded. The factor loading values in Table 2 show that all constructs have good construct validity. Hair et al. (2006) noted that factor loadings greater than 0.30 are considered significant, loadings of 0.40 are considered more important, and loadings of 0.50 or greater are considered highly significant.

Table 2 Item reliability and construct validity test

Categorical factors		Cronbach's alpha	Number of factors	Eigenvalues	Factor loading										Percentage of variance
					Item 1	Item 2	Item 3	Item 4	Item 5	Item 6	Item 7	Item 8	Item 9	Item 10	
National culture															
1	Power distance (PD)	0.760	1	2.728	0.834	0.853	0.831	0.420	0.661						54.552
	PD (after deleting item 4)	0.813	1	2.609	0.846	0.865	0.858		0.639						65.227
2	Uncertainty-avoidance (UA)	0.814	1	2.913	0.775	0.779	0.702	0.819	0.737						58.263
3	Masculinity (Mas)	0.931	1	3.929	0.905	0.925	0.867	0.846	0.888						78.587
4	Collectivism (Clv)	0.857	1	2.850	0.896	0.882	0.761	0.831							71.248
5	Long-term orientation (LTO)	0.714	1	1.920	0.745	0.868	0.782								63.998
Organisational culture															
1	Clan	0.850	1	3.474	0.735	0.769	0.829	0.813	0.721	0.688					57.897
2	Adhocracy	0.796	1	3.003	0.763	0.666	0.674	0.737	0.665	0.734					50.055
3	Hierarchy	0.797	1	3.064	0.677	0.790	0.759	0.506	0.736	0.780					51.059
4	Market	0.830	1	3.283	0.775	0.751	0.676	0.752	0.713	0.766					54.717
TQM constructs and performance															
1	Leadership	0.903	1	4.803	0.696	0.807	0.805	0.822	0.784	0.787	0.682	0.804			60.037
2	Vision and plan statement	0.932	1	5.547	0.819	0.837	0.840	0.805	0.875	0.875	0.842	0.762			69.338
3	Customer focus	0.859	1	3.553	0.745	0.745	0.799	0.808	0.731	0.786					59.216
4	Education and training	0.930	1	4.453	0.836	0.864	0.869	0.893	0.921	0.779					74.209
5	Benchmarking	0.905	1	3.722	0.875	0.857	0.876	0.835	0.871						74.442
6	Teamwork	0.921	1	3.809	0.896	0.897	0.913	0.795	0.859						76.184
7	Cont. improvement process	0.906	1	3.133	0.842	0.927	0.885	0.884							78.328
8	Employee involvement	0.925	1	3.852	0.866	0.904	0.897	0.919	0.798						77.048
9	Supplier quality management	0.850	1	3.302	0.792	0.884	0.884	0.894	0.560						66.035
10	Recognition and reward	0.891	1	3.625	0.887	0.887	0.742	0.869	0.864						72.507
11	Financial performance	0.927	1	3.289	0.859	0.927	0.924	0.916							82.223
12	Non-financial performance	0.936	1	5.128	0.847	0.808	0.848	0.845	0.854	0.904	0.882				73.252
TQM*		-	1	6.482	0.855	0.786	0.669	0.845	0.780	0.782	0.848	0.901	0.732	0.828	64.820

Notes: An eigenvalue greater than one was used as a criterion for factor extraction. *Factor analysis for TQM construct.

4 Result and discussion

The multiple regression analysis used five factors of national culture as independent variables and four factors of organisational culture as dependent variables, as shown in Table 3. The national culture had a significant effect on organisational culture, confirming hypothesis H1, and the results are as follows:

- Two factors of national culture, uncertainty avoidance and long-term orientation, had positive and significant effects on clan and market cultures.
- Three factors of national culture had significant effects on adhocracy culture where uncertainty avoidance and long-term orientation had significant positive effects, while masculinity had a significant negative effect.
- Three factors of national culture had significant effects on hierarchy culture where uncertainty avoidance and long-term orientation had significant positive effects, while collectivism had a significant negative effect.

Table 3 Regression analysis between national and organisational cultures

Predictors (national culture)	*Clan*			*Adhocracy*		
	R = 0.617 *F-value = 15.158* *Sig. = 0.000*			*R = 0.631* *F-value = 16.304* *Sig. = 0.000*		
	β	*t*	*Sig.*	*β*	*t*	*Sig.*
PD	–0.117	–1.572	0.119	–0.114	–1.554	0.123
UA	0.389	5.319	0.000**	0.273	3.785	0.000**
Mas	–0.056	–0.703	0.484	–0.132	–1.665	0.099*
Clv	–0.117	–1.338	0.183	0.034	0.399	0.691
LTO	0.462	5.710	0.000**	0.487	6.109	0.000**
Predictors (national culture)	*Hierarchy*			*Market*		
	R = 0.563 *F-value = 11.427* *Sig. = 0.000*			*R = 0.596* *F-value = 13.550* *Sig. = 0.000*		
	β	*t*	*Sig.*	*β*	*t*	*Sig.*
PD	–0.130	–1.654	0.101	–0.088	–1.157	0.250
UA	0.299	3.891	0.000**	0.285	3.820	0.000**
Mas	–0.051	–0.609	0.544	–0.113	–1.377	0.171
Clv	–0.189	–2.049	0.043*	–0.025	–0.281	0.779
LTO	0.474	5.577	0.000**	0.475	5.747	0.000**

Notes: *$t > t(0.05) = 1.657$; **$t > t(0.01) = 2.356$

These results suggest that the influence of national culture plays an important role in the formation of the organisation culture and are consistent with those of a previous study (Sadeghian, 2010). High uncertainty avoidance implies that the Indonesian companies have more empowered planning and a more formalised management system with clearly defined rules. The managers share information that contains explicit assignments, goals,

policies, and procedures. However, the companies slowly adopt technology and trends until they have been proven as effective and successful. On the other hand, the long-term orientation culture influences the Indonesian companies to look toward long-term business goals and motivates employees.

The multiple regression analysis used four factors of organisational culture as independent variables, TQM constructs and two factors of organisational performance as dependent variables, as shown in Table 4. The organisational culture significantly affected TQM, confirming hypothesis H2. Clan and adhocracy cultures had a significant positive effect on TQM. For hypothesis H3, only one factor of organisational culture (market culture) had a positive and significant effect on non-financial performance.

Table 4 Regression analysis between organisational culture, TQM, and performance

Predictors (organisational culture)	*TQM*			*Financial*			*Non-financial*		
	R = 0.781 F-value = 48.470 Significance = 0.000			*R = 0.533 F-value = 12.296 Significance = 0.000*			*R = 0.628 F-value = 20.170 Significance = 0.000*		
	β	*t*	*Sig.*	*β*	*t*	*Sig.*	*β*	*t*	*Sig.*
Clan	0.282	2.686	0.008**	0.188	1.321	0.189	0.169	1.290	0.199
Adhocracy	0.379	2.735	0.007**	0.073	0.390	0.697	0.106	0.613	0.541
Hierarchy	0.044	0.374	0.709	0.074	0.466	0.642	–0.028	–0.192	0.848
Market	0.122	0.928	0.355	0.234	1.311	0.192	0.411	2.498	0.014**

Notes: *$t > t(0.05) = 1.657$; **$t > t(0.01) = 2.356$

Organisational culture is an important aspect of TQM implementation. The clan culture emphasises commitment, communication, employee involvement, teamwork, and development while concentrating on flexibility and discretion with internal strengthening. While the adhocracy culture emphasises creativity, flexibility, innovativeness, and adaptability, both culture's dimensions suggest a conducive environment for the effective implementation of TQM. This result is consistent with previous studies (Al-Khalifa and Aspinwall, 2000; Sadeghian, 2010). The successful implementation of TQM is determined by an awareness of and adaptation to organisational culture before implementation. In addition, only market culture had a significant effect on non-financial performance in the relationship between organisational cultures and organisational performance. The market culture emphasises productivity, profitability, and goal achievement with stability and control to enhance external competitiveness. The success for a market culture is measured by a high market share, customer satisfaction, and a strong reputation among major customer segments. Indonesian companies can adopt a market culture to improve their non-financial performance.

The multiple regression analysis used ten variables of TQM constructs as independent variables and two factors of organisational performance as dependent variables, as shown in Table 5. These results show that TQM implementation had a significant effect on organisational performance, confirming hypothesis H4. Five constructs of TQM implementation (leadership, education and training, teamwork, supplier quality management and recognition and reward) had significant positive effects on financial performance, while benchmarking had a significant negative effect. Analysis shows that the five constructs of TQM implementation (leadership, teamwork, continuous improvement process, supplier quality management and recognition and reward) had

significant positive effects on non-financial performance, while benchmarking and vision and plan statements had significant negative effects.

These results are consistent with those of the previous studies (Terziovski and Samson, 1999; Salaheldin, 2009; Parast et al., 2011; Valmohammadi, 2011). Thus, leadership correlates to financial and non-financial performance. Leadership can be impactful in a variety of ways. For Indonesian companies, leaders can institute education and training to improve employee skills and achieve organisational goals. They can also develop teamwork to manage change, implement plans, solve problems, and create a sense of empathy and engagement. Teamwork can improve the quality of products and services, lower rates of failure and defective products, and was fundamental to successful TQM implementation. Additionally, companies require continuous process improvement to increase productivity, reduce failure rates, improve process efficiency, and stimulate innovation. This is also essential for supplier quality management to improve product quality and organisational performance. A continuous supply of raw materials with the required quality is vital in all stages of manufacturing. Long-term relationships with inspection teams can help minimise the cost of raw materials (Juran, 1989). In addition, recognition and rewards are important business tools. They can help improve performance within an organisation and can effectively stimulate employee commitment to quality. Companies must develop a formal compensation system to encourage, evaluate, reward, and recognise individual and team efforts at quality enhancement and improved customer satisfaction (Brown et al., 1994).

Table 5 Regression analysis between TQM constructs and performance

Predictors (TQM constructs)	*Financial*			*Non-financial*		
	R = 0.876 *F-value = 39.062* *Significance = 0.000*			*R = 0.902* *F-value = 51.282* *Significance = 0.000*		
	β	*t*	*Sig.*	*β*	*t*	*Sig.*
Leadership	0.196	2.143	0.034*	0.310	3.769	0.000**
Vision and plan statement	0.130	1.513	0.133	–0.150	–1.952	0.053*
Customer focus	–0.025	–0.361	0.719	–0.072	–1.134	0.259
Education and training	0.271	2.842	0.005**	0.122	1.429	0.156
Benchmarking	–0.565	–5.277	0.000**	–0.432	–4.496	0.000**
Teamwork	0.253	3.396	0.001**	0.396	5.909	0.000**
Continuous improvement process	0.086	1.010	0.314	0.224	2.921	0.004**
Employee involvement	–0.040	–0.394	0.694	–0.014	–0.152	0.880
Supplier quality management	0.258	3.713	0.000**	0.147	2.357	0.020**
Recognition and reward	0.337	4.268	0.000**	0.413	5.817	0.000**

Notes: *$t > t(0.05) = 1.657$; **$t > t(0.01) = 2.356$

Furthermore, Table 5 shows that benchmarking and vision and plan statements have significant negative effects on organisational performance. However, previous researchers have found benchmarking to have a significant positive effect (Malik et al., 2010), as it is one way to improve product quality, reduce production cost and increase

sales. In addition, vision and plan statements results revealed that there is no clear long-term vision towards improving organisational performance. Whereas Zhang (2000) proposed vision, and plan statements provide a clear overview of strategies for an organisation to achieve its goals. Vision provides direction and the path for transformation. On the other hand, Table 5 shows that employee involvement did not have a significant effect on organisational performance. This could be due to Indonesian companies not having employees who are thoroughly engaged in performance improvement. The aim of employee involvement is to encourage them to contribute more to the firm. However, unfortunately, some companies only view employees as one of the company's resources. Thus, managers should trust and care for their employees, and encourage and motivate them to develop and utilise their full potential.

Malik et al. (2013), Karim et al. (2008) and Martínez-Costa et al. (2008) used one-way ANOVA to compare the differences in the effects of variables. We used one-way ANOVA to examine the differences between TQM and TQM-ISO companies. Table 6 presents the means and ANOVA results for four dimensions of organisational culture. The organisational culture was not significantly different between TQM and TQM-ISO companies, disproving hypothesis H5. The one-way ANOVA shows no significant values for clan, adhocracy, hierarchy, and market cultures as the calculated results are more than the significance level of 0.05.

Table 6 Means and ANOVA of organisational cultures

Organisational culture	*TQM-ISO companies*	*TQM companies*	*F*	*Sig.*
Clan culture	4.1381	4.1780	0.179	0.673
Adhocracy culture	4.1143	4.2006	1.047	0.308
Hierarchy culture	4.2000	4.2458	0.319	0.573
Market culture	4.1881	4.3079	2.213	0.139

Note: The mean difference is significant at the 0.05 level.

These results are consistent with previous assumptions that both types of organisations that implement TQM have the same organisational culture. In addition, by implementing TQM or ISO certification, companies can further develop a similar culture and a standard for quality systems. Hence, they can implement TQM more successfully. This is due to cultural change being one of the key factors that determines the level of success in TQM implementation (Al-Khalifa and Aspinwall, 2000; Aziz and Morita, 2013; Sadeghian, 2010; Karimi and Latifah, 2012).

The calculations in Table 7 show that TQM implementation is significantly different between TQM and TQM-ISO companies, confirming hypothesis H6 in regards to leadership, teamwork, continuous process improvement, and supplier quality management because the calculated results are below the significance level of 0.05. However, the calculated results for vision and plan statements, customer focus, education and training, benchmarking, employee involvement, and recognition and reward are above the significance level 0.05. Thus, these constructs is not significantly different between both types of companies.

The vision and plan statements of the two types of companies had similar values, and were, therefore, equally important. However, customer focus values were not significantly different, indicating that the organisations think delivering quality products and great service will develop their business or sales growth. Additionally, education and

training, benchmarking, employee involvement, and recognition and reward did not differ significantly. Thus, the two types of companies had similar priorities when implementing the TQM constructs. However, leadership, teamwork, continuous process improvement and supplier quality management were significantly different between TQM and TQM-ISO companies. TQM companies had greater emphasis on these TQM implementation constructs. Finally, management leadership and continuous improvement were the most important factors for both TQM implementing organisations (Malik et al., 2013).

Table 7 Means and ANOVA of TQM implementation constructs

TQM constructs	*TQM-ISO companies*	*TQM companies*	*F*	*Sig.*
Leadership	4.1768	4.3983	5.640	0.019*
Vision and plan statement	4.3607	4.5191	2.817	0.096
Customer focus	4.3857	4.5282	2.415	0.123
Education and training	4.0143	4.1610	1.841	0.177
Benchmarking	3.8886	4.1085	3.599	0.060
Teamwork	4.3314	4.5593	6.397	0.013*
Continuous improvement process	4.0143	4.2585	5.345	0.022*
Employee involvement	4.0800	4.2136	1.582	0.211
Supplier quality management	4.1714	4.3932	6.374	0.013*
Recognition and reward	4.1543	4.2949	1.674	0.198

Note: *The mean difference is significant at the 0.05 level.

The means and ANOVA results using two variables of organisational performance as dependent variables are shown in Table 8. The organisational performance was significantly different, confirming hypothesis H7. The one-way ANOVA shows significant values for financial and non-financial performance as the calculated results are below the significance level of 0.05.

Table 8 Means and ANOVA of organisational performance

Organisational performance	*TQM-ISO companies*	*TQM companies*	*F*	*Sig.*
Financial	4.2500	4.5212	8.074	0.005*
Non-financial	4.2000	4.4213	4.860	0.029*

Note: *The mean difference is significant at the 0.05 level.

These results are consistent with previous assumptions that TQM companies perform better than TQM-ISO companies due to unequal levels of TQM implementation. It appears that most Indonesian companies implemented an ISO system for TQM. Thus, it is likely that TQM companies have additional experience implementing TQM than those ISO companies. Consequently, companies with TQM systems should not feel pressured to get an ISO certification unless it is something expected by clients or other organisations. A good management system ensures that a company will deliver goods or services in accordance with the set requirements. This enables a company to build customer confidence and compete in the global marketplace. Thus, TQM implementation

and becoming ISO certified are appropriate strategies for improving organisational performance.

5 Conclusions

Numerous hypotheses testing TQM and TQM-ISO companies show a number of relationships and comparisons between the variables as follows:

- National culture has an influence on organisational culture. Uncertainty avoidance and long-term orientation have significant positive effects on clan, market, adhocracy, and hierarchy cultures. Masculinity and collectivism have negative effects on adhocracy and hierarchy cultures, respectively.
- Organisational culture has a direct impact on TQM implementation. Clan and adhocracy cultures have significant positive effects on TQM. However, only market culture shows a positive effect on non-financial performance.
- TQM constructs play a positive role in improving organisational performance. TQM implementation requires leadership, education and training, teamwork, continuous improvement process, supplier quality management, and recognition and rewards. These constructs are vital to improving organisational performance.
- There is not a significant difference in the organisational culture at TQM and TQM-ISO companies. Companies that implement TQM systems or are TQM-ISO certified have the same organisational culture.
- There is a significant difference in the TQM implementation and performance at TQM and TQM-ISO companies. TQM companies perform better than TQM-ISO companies with regard to leadership, teamwork, continuous process improvement, supplier quality management, and financial and non-financial performance.

The results of this study indicate that national culture influences organisational culture, and that organisational culture has an effect on TQM and organisational performance. Additionally, TQM constructs have a positive impact on organisational performance, and TQM and TQM-ISO companies have similar organisational cultures. Moreover, in considering TQM implementation and performance, TQM companies perform better than TQM-ISO companies. Results indicate that an ISO certification does not necessarily add significant value to a company that has already implemented a TQM system. However, if a company requires an ISO certification they certainly should acquire one.

5.1 Managerial implications

This study has important practical and academic implications. By better understanding the nature and type of national and organisational culture and the relationship between culture and TQM constructs, managers can implement TQM more effectively. Further, managers can also implement TQM more effectively by knowing the principles of quality and the variables which have an effect on the implementation of quality systems.

Prior to the implementation of TQM or ISO systems, managers must determine the dominant organisational culture in their company. Differences in the cultural context of

each company may greatly affect the implementation of TQM or ISO systems. In addition, the following are other important implications of this study:

- Management needs to assess the culture using the proposed model in order to develop steps to implement TQM. It is necessary to create an environment and culture that supports the successful implementation of TQM.
- The proposed model could be used by managers to assess TQM implementation in their organisation. Knowledge of TQM implementation will provide insight for managers to evaluate and prepare plans for performance improvement.

5.2 Limitations and future research

This research addressed the issue of culture and its relationship with the implementation of TQM. Despite our findings, and there are opportunities for further research. First, the instruments in this study can be used for larger sample sizes that have more mixed demographics. Second, the data collected in this study was subjective and dependent on the perceptions of the respondents. Further research could include observations using a longitudinal case study. Third, further research could consider financial statements and other performance measures as indicators of company performance.

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PAGE 1

PAGE 2

PAGE 3

PAGE 4

PAGE 5

PAGE 6

PAGE 7

PAGE 8

PAGE 9

PAGE 10

PAGE 11

PAGE 12

PAGE 13

PAGE 14

PAGE 15

PAGE 16

PAGE 17

PAGE 18

PAGE 19

PAGE 20