Testing the readiness of an organisational culture profile to a TQM implementation

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Abstract

Purpose – The purpose of this paper is to apply an existing theoretical model of organisational culture contextualised for total quality management (TQM) as a means of assessing the readiness for implementing TQM in the workplace. The “Amalgamated Model” is a hybrid that encapsulates organisational culture traits and their relative contribution as indicators of effective TQM implementation.

Design/methodology/approach – A questionnaire that would test the theoretical model was devised and administered to a sample population in a production facility located in Central Europe, Organisation X.

Findings – A profile of the organisation was derived which revealed the strengths and weaknesses of the organisation in relation to the cultural traits of the theoretical model.

Research limitations/implications – The research population comprised management/supervisory staff only and thus provides a partial view of Organisation X.

Practical implications – For practitioners, particularly those who specialise in quality management, the practical implications of this research are twofold: first, it provides insights into aspects of organisational culture and TQM implementation; and second, it demonstrates how a theoretical framework may be applied in the workplace to assess readiness for TQM implementation.

Originality/value – This research contributes to the subject area body of knowledge by applying a recent theoretical model to assess readiness for implementing TQM.

Keywords Total quality management, Organizational culture, Quality management

Paper type Research paper

Introduction

Let us start with an intriguing question: “Could an organisation use its organisational culture profile to assess the readiness for implementing Total Quality Management in the organisation?” There are two key reasons to believe that may be so. First, organisational culture is “a multifaceted phenomenon” (Ehlers, 2009) which is the very essence of the organisation – it prevails rather than being transient depending on circumstances. Second, at the early stage of total quality management (TQM) implementation when a quality culture is not yet firmly established, it is organisational culture that has a strong influence on employee behaviour (Wu et al., 2011). Thus, organisational culture seems a more stable and appropriate predictor than quality culture. Practitioners are acutely aware that if TQM initiatives are not successful, it becomes all the more difficult to get people’s buy-in to quality management or, as Beer (2003) puts it, “[…] failed TQM programs inoculate the organisation against learning and change in the future” (p. 631). Therefore, it may be useful to examine organisational culture as a predictor of the readiness to implement TQM before embarking on such a radical change. Green’s (2012) “Amalgamated Model” sets out to do just that and our research could contribute to validating the model. Green selected four models each of which was developed from a particular conceptualisation of organisational culture (in this paper, it is not practicable to discuss the theoretical basis of the individual models).

The target for this research was a single site in Organisation X which is a global manufacturer of cleaning equipment with production facilities in seven countries across the USA, Europe and Asia. As the organisation is located in different countries, it pays particular attention to its organisational culture settings. In 2011, Organisation X updated its core values, and, for the first time, quality was included among them. To back up this
commitment to quality, the senior management team gave the go ahead to a pilot implementation of TQM, to be rolled-out in stages. The first stage started in a production site ("Site") in Central Europe, but unexpected resistance to change of white-collar workers – managers and supervisory staff – caused TQM implementation to fail. By addressing the following two research questions, top management has set-up this research to check if the organisational culture profile had any implication on TQM failure, and if so, to provide recommendations for improvements to the organisation:

**RQ1.** Is there a difference between the TQM compatible culture profile and the current culture profile of white-collar workers?

**RQ2.** Implication to the organisation: How do top managers ensure that required TQM compatible culture profile is met?

This study demonstrates one way how to apply a recent theoretical model to answer these research questions.

**Literature review and research hypothesis**

TQM is not new, and it is, in essence, a holistic approach throughout an organisation that sets the foundation for good business practices that focus on stakeholders. With the evolution of theory and practice in quality management, there has been a shift in understanding and focus from "hard" aspects such as tools, techniques, practices and systems to "soft" behavioural and cultural elements of TQM (Wu et al., 2011). For Fotopoulos and Psomas (2010), quality improvement is influenced largely by adopting soft TQM practices and behaviours, and quality tools and techniques are secondary. Similarly, Yunis et al. (2013) found that soft TQM has a higher impact than hard TQM on competitive strategy formulation and on performance. Furthermore, Dahlgaard et al. (2011) concluded TQM is, to a large extent, about the intangible factors of leadership, people management and partnerships being changed so that a new organisational culture is developed to support and improve the organisation’s core activities. Although the development of an organisational culture that is more receptive to TQM has been identified as the key enabling factor for TQM success, that shift in culture is not easy to achieve (Dahlgaard et al., 2011). It requires a paradigm shift by all employees in the organisation and the restructuring of social relationships (Oakland, 2011). It is difficult to envisage the type of initiative or project that would – or realistically could – directly aim at changing an organisation’s culture (Gallear and Ghobadian, 2004). Some studies, such as Prajogo and McDermott (2005), have concluded that organisational culture is the most significant factor in the success or failure of TQM initiatives. Indeed, Dahlgaard et al. (2011) see risks in attempting to transform an organisation without having a consistent and constant organisational culture to build on. To some extent, this point is reinforced by Boboli and Reiche (2014) in their examination of the relationship between organisation culture and the EFQM excellence model. In their view, efforts to implement business excellence often concentrate on structure (largely centred on the management of processes and the realisation of the organisation’s products/services) at the expense of culture. Calvo-Mora et al. (2013) take the view that organisational culture should be oriented towards continuous improvement which is a crucial element for the success of TQM initiatives. Creating that supportive culture would foster individuals’ readiness for organisational change and thus lead to an increased involvement in the implementation of TQM (Haffar et al., 2014).

**The focus on TQM**

There is scant published research regarding the integrative nature of organisational culture and TQM. Perspectives that have been studied include the causal relationship between
organisation culture and firm performance (Boyce et al., 2015) and the relationship between organisational culture and TQM by way of the Malcolm Baldrige National Quality Award criteria (Valmohammadi and Roshanzamir, 2015). An analysis of the European excellence model by Dahlgaard-Park (2008) indicated organisational culture was largely absent from the model’s criteria. Heine et al. (2016) developed a conceptual framework for analysing organisational culture and strategy. They discussed how their framework could be deployed in agile manufacturing; a component of the framework was the “TQM values” proposed by Detert et al. (2000) in their alignment of TQM principles and organisational culture attributes.

**The Amalgamated Model for TQM compatibility**

Green’s (2012) proposition is that “the whole is greater than the sum of the individual parts” and that an integrative approach offers affordances for understanding what successful TQM might look like in the workplace. His aim is to bring together components from conceptual models into an Amalgamated Model specifically for TQM. The premise of the Amalgamated Model (Figure 1) is that a cultural profile can be devised and used as an indicator or assessment of an organisation’s readiness for TQM. He selected four differing conceptualisations of organisational culture and overlaid each with a TQM perspective informed by theory and practice[1]. From that, he derived a scale of the relative importance of each factor as an indicator of TQM readiness. Thus, the model represents the optimum profile of an organisation’s cultural traits.

Sociability and solidarity (Green, 2012, p. 147) are dimensions of social relations that characterise the workplace in terms of interpersonal relations and task orientation, respectively. Sociability focusses primarily on relations between individuals who are likely to see one another as friends, while solidarity is task-oriented between individuals and groups. For instance, Baumgartner (2012) found in a particular organisation, the corporate strategy for sustainability and the resultant business practices exemplified high solidarity with “[…] a clear focus on goals and achievements with a low-level social interaction and informal communication between individuals” (p. 11).

The traits integration, differentiation and fragmentation (Green, 2012, p. 148) characterise perspectives of the organisation regarding the holistic nature of TQM with cultural change being an organisation-wide transformation (Mosadeghrad, 2014a, p. 171).

<table>
<thead>
<tr>
<th>Balance to assist TQM success</th>
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<tbody>
<tr>
<td>High</td>
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<td>Low</td>
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<table>
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<tr>
<th>Culture indicator</th>
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<tbody>
<tr>
<td>Sociability</td>
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<tr>
<td>Solidarity</td>
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<tr>
<td>Integration</td>
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<td>Differentiation</td>
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<td>Fragmentation</td>
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<td>Consensus</td>
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<td>Pervasiveness</td>
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<td>Psychological intensity</td>
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<td>Adaptability</td>
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<td>Involvement</td>
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<td>Consistency</td>
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<td>Mission</td>
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**Figure 1.** Amalgamated model for TQM compatibility

*Source:* Green (2012) reprinted by permission of the publisher
Conversely, fragmentation describes a culture that lacks clarity and with little or any commitment to the organisation’s core values. In his analysis of research in healthcare organisations, Mosadeghrad (2013) identified numerous barriers to implementing TQM which could be described as fragmentation. Similarly, TQM implementation difficulties in clinical areas were due to fragmented, isolated and inconsistent quality improvement projects that were limited to a few departments and that had narrow measurable outcomes (Mosadeghrad, 2014b). Conti (2010) takes the view that fragmentation is not so much a quality management problem but rather, is a general management problem and the root of that problem is “[…] strategic fragmentation: lack of systemic perspective, silo-type organisations and excessive specialisation” (p. 354). It is pervasive since it is not only a typical characteristic of departments but also among hierarchical levels of the organisation (Dobosz-Bourne and Kostera, 2007). Karimi and Kadir (2012) see differentiation as being equally challenging for TQM implementation. For them, it seems unlikely that TQM in its present form would be able to accommodate differentiation and fragmentation perspectives which emphasise the existence of subcultures and of ambiguity, respectively.

Consensus, pervasiveness and psychological intensity are cultural traits of “the three-dimensional framework for describing culture” (Green, 2012, pp. 150-152). The key assumption regarding cultural “consensus” is the idea that most of the people in the organisation have absorbed the culture and behave in accordance with its beliefs and values. In this perspective, if there is not high consensus, then there is no culture. From that, the “consensus” dimension seems to have significant impact on TQM success.

The “pervasiveness” indicates the range of behaviours and beliefs that the culture imposes on its employees. This relates to interpersonal relations, conform to standard of dress, rituals, beliefs and norms of behaviour which relate to virtually everything they do. A lack of pervasiveness will result in more freedom of people in carrying out their jobs. Since TQM requires sharing of experience and best practice, too much freedom tends to work against this requirement. On the other hand, high pervasiveness would indicate the greater obligation to behaviours and beliefs. Since the TQM implementation requires an essential change in the way people carry out their jobs, the high pervasiveness need to be reduced as well. Consequently, too little or too much pervasiveness could work against TQM success.

The “psychological intensity” ranges from attitudes, through behaviour, through values to what Schein (1996 cited by Frisk and Bannister, 2017, p. 2076) calls “taken-for-granted assumptions”. It means that in an organisation where its employees operate based on the taken-for-granted assumptions their values, behaviours and attitudes are consistent with the taken-for-granted assumptions. The TQM success requires employees who have ability to make their own decisions, which would be best achieved if they possess substantial “psychological intensity”.

The linkages and dependencies between the internal and external environment (Green, 2012, pp. 152-153) are depicted by adaptability and involvement which relate to the external environment, and consistency and mission which relate to the internal environment although the internal environment should not be thought of in isolation as mission is the shared vision of what the organisation would be like in the future and was the strongest predictor of performance (Moxnes, 2013). Indeed, Boyce et al. (2015) posit that organisational culture predicts subsequent levels of financial performance more accurately than vice versa. Jorritsma and Wilderom (2012) found that a top-down approach, where cultural change is driven from the top of the organisation, may fail even when the changes appear to be a straightforward process, if there is low adaptability within the organisation to cultural change. Another reason for failure to strategically adapt to external influences is from being overly committed to existing practices (Carmeli et al., 2015) which increases consistency and inhibits the ability to respond to changes in the environment.
To answer the first research question, the literature review assisted in the formulation of the following null hypothesis:

\[ H_0. \text{ There is no significant difference in the magnitude of cultural indicators comparing the Amalgamated Model with the organisational culture profile of white-collar workers.} \]

Findings of this hypothesis test are used to answer the second research question provided in the Conclusion section.

**Methodology**

In this research, the deductive approach is used to analyse quantitative data, collected over cross-sectional time-horizon type that included one-time measurement of variables by applying a carefully designed and validated questionnaire. An alternative way of collecting primary data would be to apply a mixed method instead of mono as used in this study. Collecting quantitative and qualitative data in parallel would offer greater confidence in the conclusion (Tashakkori and Teddlie, 2010, p. 125), although mixed methods research is time consuming and would require more resources than a questionnaire survey. This dilemma raises the question about the credibility of the current design.

The credibility of research design had been thoroughly evaluated in the Instrumentation section and in the light of the reliability and validity measures (Saunders *et al.*, 2015, pp. 201-207).

**Population and sampling**

The population of this research comprises 62 white-collar staff working at Site. To achieve generalisability for this population the required minimum sample size, calculated as a linear interpolation from tabular data at 95% confidence level, is 50 (Saunders *et al.*, 2015, p. 280). This sample would be sufficient at 100 per cent active response rate. However, the active response rate in three previous Site surveys was 87, 91 and 81 per cent, respectively, giving 86 per cent on average. Therefore, to obtain the required number of responses \( n = 50; 80.6 \text{ per cent} \), the real sample size, proportionated to the real active response rate, from a population of 62 would be 58.

**Instrumentation**

**Questionnaire design.** Collection of quantitative data was performed on a self-designed Likert-style rating scale questionnaire. While determining the number of items, there is no right or wrong answer as to how many attitudinal statements a Likert questionnaire should contain. However, there is a good evidence to suggest that Likert questionnaires are more accurate if they contain around 20–25 items (Nicholson, 2003, p. 11). A pilot survey usually ends with deletion of statements on the questionnaire which do not predict the final overall score, therefore the pilot questionnaire was made of a few more items. To secure a recommended number of items, there were three related statements designed (by this author) for each of Green’s (2012) 12 indicators of the Amalgamated Model, giving 36 items of pilot questionnaire in total.

Selection of the optimal number of rating scale points is made following Krosnick and Presser’s (2010, p. 272) argumentation. They determined reliability and validity to be the main selection criteria among different number of rating scales and found that a seven-point scales are optimal in these instances.

The Likert-scale questionnaire scorecard. A scorecard that collects scores for each response for all statements defined separately is used to help researcher to score the completed questionnaires. Response scores are from 1 to 7 points, but in different directions depending on statement’s type. This means that for a positive attitudinal statement the highest score of
7 points is given to “strongly agree” while the lowest score of 1 point is for “strongly disagree” responses. All other responses on the scale score adequately relative to the two end points. For a negative attitudinal statement response, the scores are in reverse order.

Validation of the questionnaire
Validation of the questionnaire is performed by assessing its validity and reliability. Validity is about accuracy, while reliability is about precision of the questionnaire. That is, validity refers to the ability of the questionnaire to measure what it is intended to measure, whilst reliability refers to consistency which means the questionnaire should produce consistent findings at different times and under different conditions (Saunders et al., 2015, pp. 449-450). Methods used to validate the questionnaire included:

1. Translational validity: content validity and face validity; and
2. Reliability tests: a pilot survey to test internal consistency and a retest.

Content validity. Content validity refers to the extent to which the measurement statement in the questionnaire provides adequate coverage of the investigative questions. To estimate the content validity of the questionnaire it is recommended for the researcher (Parsian, 2009, p. 3) to clearly define the conceptual framework of research by undertaking a thorough literature review and seeking expert opinion. While the former was presented in the literature review section, the latter was performed by using three independent individuals, including two academics who research and publish in the field of organisational culture for more than 20 years, and one manager from the global HR department who has more than 15 years’ experience in the field of organisational culture and questionnaire validation. These three individuals were asked to assess whether each measurement statement in the questionnaire was “essential”, “useful but not essential” or “not necessary” in the sense that they are appropriate indicators of the construct.

Their assessment indicated that more than 95 per cent of the content is valid and consistent with the conceptual framework and, thus, only two items required minor correction.

Face validity. Face validity indicates whether the questionnaire appears to be appropriate to the study purpose and content area. It evaluates the appearance of the questionnaire in terms of feasibility, readability, consistency of style and formatting and the clarity of the language used (DeVon et al., 2007, p. 157). To improve face validity, during the design of the questionnaire it is secured that each individual statement is unambiguously worded to avoid misinterpretations, it is free from leading phrases, technical language terminology, obscure terms, jargon and colloquialisms that may confuse the meaning of the statement, and it is a single statement focussing on one piece of information at a time. Also, in each statement agreement bias has been avoided by framing both positive and negative questions so that respondents will evaluate each question rather than uniformly agree or disagree with all responses (Gorrell et al., 2011, p. 518).

To determine the face validity of the questionnaire, the participants in the pilot survey were asked to complete the questionnaire and assess each question in terms of the clarity of the wording, the likelihood the target audience would be able to answer the questions, and the layout and style. Each item is assessed on the scale 1–4, where 4 is the totally acceptable and 1 totally not acceptable. The result of 432 assessed items (12 respondents scored 36 items) indicated that 96 per cent of respondents understood the questions and found them easy to answer and 97 per cent indicated the appearance and layout would be acceptable to the intended target audience.

Pilot test and retest of the questionnaire. A pilot survey was performed to test the internal consistency of the questionnaire. An appropriate number of respondents in the pilot is determined by a general “rule-of-thumb” that suggests, “have twelve people in the pilot...”
survey for every 50 people intended to have in the final ‘live’ survey” (Nicholson, 2003, p. 16). Therefore, 12 employees are selected for a pilot survey.

The degree of internal consistency of each construct of the pilot questionnaire is measured by Cronbach’s $\alpha$ value (Dunn et al., 2014). Out of 12 indicators, 11 had Cronbach’s $\alpha$ below the cut-off value of 0.70 which means those constructs had poor internal consistency. The item analysis that followed removed all items that did not work, resulting in a revised questionnaire of 21 items in which Cronbach’s $\alpha$ of these improved constructs ranged from 0.73 to 0.81. The item analysis ensured all questionnaire statements work and have internal consistency, meaning each indicator predicts its construct’s score, high or low.

A questionnaire is considered to be reliable if it produces consistent results each time when the same respondents are tested. In particular, a high correlation between the scores at the two time points indicates the instrument is stable over time (Parsian, 2009, p. 5).

The retest of the questionnaire, conducted a month after the pilot test, shows that each culture-indicator scale has a Cronbach’s $\alpha$ value exceeding 0.70 and is therefore deemed reliable.

Data collection
The data collection process started with receiving a formal Institutional Endorsement from the organisation’s representative who approved the survey.

Thereafter, the entire process was managed by a gatekeeper. Their tasks were, amongst others, to randomly select a sample eligible to respond, send an official invitation letter and an informed consent sheet to each potential respondent with a request to state clearly their willingness or unwillingness to participate in the survey, manage the recruitment process including replacements for any employees who were unreachable or unwilling to participate, and provide all participants with the hyperlink to the electronic questionnaire.

The same recruitment process was used for selection of respondents for pilot survey.

Steps of data processing and assessing “readiness”
Preparation and analysis of the collected data followed the steps presented in Table I and are performed using an off-the-shelf statistical package.

The questionnaire scores obtained on the 1–7 scale are not directly comparable with those of the Amalgamated Model presented on a 1–8 scale (Figure 1). Therefore, to achieve comparability “readiness” was assessed using the following data transformations and assumptions:

1) the Amalgamated Model’s 1–8 scale, as seen in Figure 1, is proportionated to the Likert 1–7 scale;

<table>
<thead>
<tr>
<th>Process steps</th>
<th>Tools and techniques used</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Check generalisability to the population</td>
<td>Response rate</td>
</tr>
<tr>
<td>2. Screening for data completeness. Delete record with missing data</td>
<td>Visual screening</td>
</tr>
<tr>
<td>3. Nominal data recording</td>
<td>Likert scorecard</td>
</tr>
<tr>
<td>4. Eliminate outlier data</td>
<td>Box plot analysis</td>
</tr>
<tr>
<td>5. Normality test</td>
<td>Anderson–Darling normality test</td>
</tr>
<tr>
<td>6. Testing null hypotheses: $H_{0}$</td>
<td>1-sample sign confidence interval test</td>
</tr>
<tr>
<td>6.1 For non-normal distribution of data use nonparametric statistics</td>
<td>1-sample $t$-test</td>
</tr>
<tr>
<td>6.2 For normal distribution of data use parametric statistics</td>
<td></td>
</tr>
</tbody>
</table>

Table I. Summary of data processing steps and associated tools and techniques used in TQM implementation.
the comparison of organisational culture profile with the Amalgamated Model profile can be obtained through a significance test of each measured indicator’s value, while considering each corresponding trait in the Amalgamated Model as the reference value;

(3) an indicator is deemed significantly different from the Amalgamated Model’s hypothesised reference trait if that reference value lies outside the 95% confidence interval of the measured indicator; and

(4) it is assumed that two cultural profiles (measured and hypothesised), significantly differ if values of at least one indicator-trait pair significantly differ.

Data analysis and results
Responses were obtained from 55 employees, giving a higher response rate (91.6 per cent) than required (80.6 per cent) and the sample size was proven sufficient to make a statistical inference about the population.

The first step of the data preparation was the screening of the questionnaire for missing data which did not reveal any missing data cases and all responses were then used in the analysis.

Data preparation continued with the nominal data recording and numeric value calculations. To obtain the numeric value for each measured indicator the Likert-scale questionnaire scorecard was used.

Next, the questionnaire was screened for outliers’ data. It is important to identify and delete outliers from the analysis because these serve to increase error variance, reduce the power of statistical tests and a distortion of the results of a statistical test may lead to a wrong conclusion (Sajtos and Mitev, 2007, p. 206). The definition of outliers an “abnormal” observation that is either much higher or lower than other values in a random sample from a population (p. 120) and the analyst decides what will be considered an “abnormal” value. In this analysis the outliers were calculated with the Carling method (2000, cited by Wilcox, 2011, pp. 41-42), in which any value greater than or lower than 2.2 interquartile range (IQR) from the median is declared an outlier. Using this method, a total of 29 outliers (2.5 per cent of the data set) were identified and deleted from further analysis.

Finally, the data set of each indicator is tested for normal distribution as different statistical tools apply for parametric and nonparametric data. This is performed with the Anderson–Darling normality test (http://projecteuclid.org/euclid.aoms/1177729437), because it works best with small sample sizes (Razali et al., 2012, p. 5). The null hypothesis for normality test:

\[ H_0: \text{Data are normally distributed.} \]

Normality tests of all indicators were significant at \( p \)-value less than 0.005 (Table II), which is less than significance level (0.05) used in these tests, therefore the null hypotheses for normal distribution of all indicators were rejected for respondents’ data.

Since all data sets are not normally distributed, the test of research hypothesis is performed with the nonparametric statistics.

Testing hypotheses
The null hypotheses \( (H_0) \) of all indicators were tested, with the 1-sample sign confidence interval test (Table I). This nonparametric test compares the sample data to a hypothetical population median (DeMuth, 2014, p. 600) and determines the significance based on the confidence interval estimation of the sample median (Anderson et al., 2014, p. 910). In these tests the sample median is the median obtain for each indicator (Table II), while the
hypothetical population median is the reference value of the corresponding indicator in the Amalgamated Model.

Results of hypotheses tests with additional information about where the hypothesised population’s median resides as compared to the sample median and its 95 per cent confidence interval are presented in Table III.

All hypotheses tests are performed at the 0.05 significance level. At this significance level, the $H_0$ for sociability, differentiation and involvement indicators are not rejected, while for the rest of the indicators the $H_0$ is rejected because the hypothesised value of each indicator resides outside the confidence interval of the corresponding indicators’ sample median (Figure 2).

**Discussion of findings**

The research results of cultural indicators detailed in the previous section are outlined in Figure 2 and discussed further.

The red markers in Figure 2 represent the measured medians of each culture-indicator of the white-collar staff which are compared with the hypothesised culture profile (blue bars) compatible with the TQM initiative that Green (2012, p. 155) defined. The black lines depict 95% confidence interval of the measured medians of Site’s cultural indicators.

<table>
<thead>
<tr>
<th>No.</th>
<th>Indicators</th>
<th>All respondents (white-collars)</th>
<th>The test is significant at $p$-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sociability</td>
<td>Mean: 4.511, SD: 0.992, Median: 4.00</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>2</td>
<td>Solidarity</td>
<td>Mean: 4.845, SD: 1.243, Median: 5.00</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>3</td>
<td>Integration</td>
<td>Mean: 4.473, SD: 1.613, Median: 5.00</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>4</td>
<td>Differentiation</td>
<td>Mean: 4.109, SD: 1.467, Median: 4.00</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>5</td>
<td>Fragmentation</td>
<td>Mean: 4.427, SD: 1.398, Median: 5.00</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>6</td>
<td>Consensus</td>
<td>Mean: 4.577, SD: 0.936, Median: 5.00</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>7</td>
<td>Pervasiveness</td>
<td>Mean: 5.796, SD: 0.735, Median: 6.00</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>8</td>
<td>Psychological intensity</td>
<td>Mean: 3.655, SD: 1.590, Median: 4.00</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>9</td>
<td>Adaptability</td>
<td>Mean: 3.736, SD: 1.554, Median: 3.00</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>10</td>
<td>Involvement</td>
<td>Mean: 5.467, SD: 0.796, Median: 6.00</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>11</td>
<td>Consistency</td>
<td>Mean: 4.682, SD: 1.277, Median: 5.00</td>
<td>&lt; 0.005</td>
</tr>
<tr>
<td>12</td>
<td>Mission</td>
<td>Mean: 4.682, SD: 1.407, Median: 5.00</td>
<td>&lt; 0.005</td>
</tr>
</tbody>
</table>

Table II. Results of descriptive statistics and normality tests of each indicator for respondents
The first indicator, sociability, had the median level 4 for white-collar workers and its 95% confidence interval ranged from 4 to 5, therefore it did not differ significantly from the hypothesised value (5). Hence, the null hypothesis for sociability is not rejected. The percentile distribution of responses on the seven-point Likert scale for this indicator showed that 42 per cent of respondents "agreed somewhat" or "agreed" that Site's employees "truly like one another" (Q6) and 49 per cent that they "often trust in one another about personal things" (Q17). While 5 per cent strongly agreed with the former, no one did with the latter statement. This result indicates a moderate level of sociability which is consistent with findings in the academic literature. Pinto et al. (2011) suggested high sociability characterised by a strong sense of friendship, loyalty and commitment to the group (p. 380) is not favourable for a TQM initiative as it requires a complete restructuring of social relationships; as such, a moderate sociability level, which Green (2012) defined at 5, is more acceptable.

Contrarily, the solidarity culture-indicator of white-collar workers (5) significantly differed from the hypothesised value (7), therefore the null hypothesis for solidarity is rejected. In total, 64 per cent of respondents "agreed somewhat" or "agreed" that Site has "robust team solidarity" (Q12) and 71 per cent that employees' "collective determination for success is high" (Q7). However, no one strongly agreed with the former, and only 2 per cent with the latter statement. In the knowledge that TQM implementation had failed at Site, the result of this hypothesis test had underpinned some previous research findings (Manning, 2010, p. 84; Colurcio, 2009, p. 245) which argued that low solidarity is one of the key obstacles to TQM success.

The null hypothesis for integration was also rejected because this culture-indicator of white-collar workers (5) was significantly lower than the hypothesised value (7). Expressed statistically, 58 per cent of white-collar workers "agreed somewhat" or "agreed" that "there is a charismatic leader on Site who represents or embodies the organisation" (Q18), and 60 per cent with the fact that "the means Site runs business is consistent" (Q2). Only 4 and 2 per cent "strongly agreed" with these two statements, respectively. Such a low level of agreement makes it difficult to achieve a strong integration of people from different parts of the organisation, which is necessary for effective TQM (Mosadeghrad, 2014b, p. 321).

While the differentiation indicator of white-collar workers (4) did not significantly differ from the hypothesised value (5), the fragmentation trait of white-collar workers (5) produced the highest difference as compared to the hypothesised value (1). Statistical figures of fragmentation were self-explanatory. In total, 44 per cent of respondents agreed...
that “the doubtfulness is thought of the way things are” (Q3) in Site, while 56 per cent agreed that “the cooperation among different departments are characterised with inconsistency, complexity and lack of clarity” (Q14). Nevertheless, the revealed high fragmentation of Site’s culture had supported some earlier research findings, which highlighted fragmentation as the main obstacle for TQM success (Mosadeghhrad, 2013, p. 151; Conti, 2010, p. 354). The negative implication of revealed fragmentation for Site was that it led to isolation between departments, emerged subcultures and doubtfulness in leadership that all caused TQM to fail.

The median value for all the following three indicators, namely, consensus, pervasiveness and psychological intensity were significantly deviated from their corresponding hypothesised value, hence their null hypotheses were rejected. Expressed statistically, for consensus, 62 per cent of respondents “agreed somewhat” or “agreed”, but no one “strongly agreed” that “in our Site, it is easy to reach agreement, even on tough problems” (Q11). For pervasiveness, 84 per cent of respondents agreed (from “strongly” to “somewhat”) that “her/his immediate manager is an active role model for organisation values” (Q4), while for psychological intensity 36 per cent of respondents “agreed somewhat” or “agreed”, but no one “strongly agreed” that organisation “employees equally conform to standards of dress” (Q21). The results of the hypothesis tests underpinned the assumption from literature that due to identified low consensus, employees in this organisation did not absorb the culture, hence do not behave in accordance with its beliefs and values. Consequently, the lack of consistency among behaviour, beliefs and values of white-collar workers increased dominance for managerial control that led to the very limited psychological intensity of these employees (Green, 2012). This cultural profile was proven counterproductive in Site because, as literature suggested, TQM success requires employees who have the ability to make their own decisions which would be best achieved if they possess substantial “psychological intensity” (p. 151).

Only the involvement trait from the last four indicators of the Amalgamated Model has the expected score, therefore its null hypothesis was not rejected. Contrarily, the null hypotheses of the remaining three culture indicators were rejected. In particular, adaptability scored significantly lower, while consistency and mission significantly higher than the corresponding hypothesised indicators in the Amalgamated Model. Expressed statistically, for adaptability, 20 per cent of respondents “agreed somewhat” or “agreed”, but no one “strongly agreed” that “efforts to make change usually do not face resistance” (Q15), while 55 per cent agreed that “improvements are rewarded” (Q5). For involvement, 76–78 per cent of respondents agreed (from “strongly” to “somewhat”) that “most workers are widely involved in their job” (Q8) and that “teams are our fundamentals on which we build on” (Q19). For consistency, 67 per cent of respondents agreed (from “strongly” to “somewhat”) that Site managers “do what they promise” (Q20), while 60 per cent of respondents agreed that “everyone in Site use every effort to achieve ‘win-win’ outcome” (Q9), while for mission, 62 per cent of respondents confirmed that “Organisation’s strategic direction is clear” (Q10), and 69 per cent “agreed somewhat” or “agreed”, but no one “strongly agreed” in an understanding of what needs to be done “to succeed in the long-term” (Q16).

In the context of Site, TQM intervention was driven from the top of the organisation and was deemed a straightforward process. However, results of these hypotheses reinforced similarities with some earlier study findings in which researchers indicated cultural change driven from the top of the organisation may fail even it is deemed a straightforward process, if there is a low adaptability within the organisation to cultural change (Jorritsma and Wilderom, 2012, p. 380), if there is the increased consistency that inhibit the ability to respond to changes in the environment (Carmeli et al., 2015, p. 8), and where the high mission traits are not compatible with the important feature for TQM acceptance which is flexibility (Yilmaz and Ergun, 2008, p. 302).
Conclusion
This research set out to evaluate an existing theoretical model of organisational culture contextualised for TQM as a means of assessing the readiness for implementing TQM in the workplace. This means of evaluation was illustrated by applying the Amalgamated Model (Green, 2012) to a particular production Site of Organisation X.

In the Amalgamated Model, as Green (2012) proposed, the level of 12 cultural indicators represents the relative positions of the traits which, when balanced in this way, could make the organisation “TQM compatible” (p. 154). This research found the relative position of nine individual culture indicators of Site were significantly different from the balance of traits suggested by Green’s hypothesised model. Namely, the cultural indicators that possessed a considerably higher intensity were fragmentation, pervasiveness, consistency and mission while indicators with substantially lower levels were adaptability, solidarity, integrity, consensus and psychological intensity. Conversely, the traits that were well aligned were found to be sociability, differentiation and involvement.

In particular, regarding the values for solidarity and sociability, Site has a disparate culture as opposed to one where staff pull together to achieve business aims and objectives. The same trend is evident with the results for differentiation, integration and fragmentation. The overall picture of Site indicates a siloed organisation with subcultures and a lack of cohesion, all of which are negative indicators for TQM (Karimi and Kadir, 2012). The disparity in the values for psychological intensity is striking—the attitudes and behaviours that are the essence of TQM run contrary to Organisation X’s culture.

Finally, according to the findings of this research, it can be concluded that the overall culture profile of Site in Organisation X and that of the Amalgamated Model are proven to be significantly different.

Implications for the organisation
Top managers of Site should be aware of the cultural values emphasised in their organisation because of their influences on the success of TQM implementation. This research provides information for the Site’s managers concerning the current organisational culture profile and improvement opportunities to make the culture more amenable for TQM development.

Top managers should address the deviant culture traits that reside further from the optimum.

To improve solidarity of its employees, managers should pay high attention to business matters with a clear understanding of purpose, commitment and focus (Windsor, 2003, p. 37). To reduce fragmentation, top managers should increase cultural integration but not at the expense of the currently appropriate differentiation level if they wish to achieve the “TQM compatible” culture. The enhancement of the cultural integration requires focus on a leader who fosters continuous improvement, customer satisfaction and employee involvement (Goetsch and Davis, 2013) as the primary focus of cultural content by offering the possibility that the charisma of that particularly effective leader might be institutionalised (p. 1). To make the leader-centred aspect of the integrative forces work in favour of TQM, top management should appoint a charismatic leader in this Site and provide the required support. It is important to stress that integration and fragmentation paradigms, by nature, have opposite direction of changes that means, increments in integration will cause decrements in fragmentation. Therefore, the currently highly fragmented organisational culture characterised by ambiguity, inconsistency, complexity and lack of clarity, which all are barriers to successful TQM implementation (Mosadeghrad, 2013, pp. 151-152; Conti, 2010, p. 354; Karimi and Kadir, 2012, p. 210), can be reduced by reinforcing integration culture through an integrating mechanism that holds together a potentially diverse group of organisational members who share a
common perspective and values. This “integrating mechanism” reinforced by the charismatic leader should institutionalise cross-functional project teams, cross-departmental regular meetings and usage of the established organisational channels for consistent communication of goals and achievements.

Top managers should also increase the psychological intensity of its employees to become ready for TQM initiatives. The success of the TQM initiatives requires a strong culture built on a deep psychological intensity. Otherwise, it would be very risky to embark on TQM implementation with employees who only conform behaviourally to the new Site culture without accepting the values and attitudes of the organisation. Therefore, it is recommended for Site that the leadership and communication processes establish control of beliefs and behaviours through the manipulation and control of symbols, and through generation of systems and procedures that are fully accepted by the members of the culture. The recommended symbols may include standardised workwear with a recognised logo, acceptance of new approaches to interpersonal communication and the use of Site symbols and visual management information in production areas. Once the symbols are fully accepted these must be formalised as norms or procedures to ensure that, at the deepest level of psychological intensity, the appropriate behaviours become embedded.

Top managers should reduce the pervasiveness of the existing culture of Site’s employees if they are to achieve a “TQM compatible” culture. The current high pervasiveness indicates Site employees remain attached to the behaviours and beliefs of the existing cultural settings. However, TQM implementation requires an essential change in how people carry out their jobs and, as such, high pervasiveness needs to be moderated.

Finally, to achieve the “TQM compatible” cultural profile, top managers should also moderate the intensity of the “stability and direction” cultural dimension by reducing levels of the consistency and mission cultural traits. Lower cultural stability is required to allow greater flexibility which seems to be more important for TQM implementation (Green, 2012, p. 153). To achieve lower consistency, top management should initiate changes in its core values. The reduction in mission requires management to change its vision, strategic direction and goals. Nevertheless, goals and objectives should be linked to the new vision and mission of organisation’s strategy that will provide everyone with a clear direction in their work.

Limitations and future research

Despite the researcher’s efforts to ensure methodological rigour and a thoroughly conducted analysis, this study has some limitations.

First, the target population comprises only professionals of the researched organisational Site. It means the survey is conducted only with white-collar workers and, therefore, the depicted organisational culture may not be generalised to the entire Site. To address the generalisation issue, it would be useful to expand research to blue-collar workers of the Site or more widely to other sites in Organisation X.

Second, only the mono method was used to collect primary data. Such a design seems sufficient for descriptive purposes to depict an accurate profile of the organisational culture, but some may question its suitability for explanatory purposes. As Wood and Welch (2010, p. 57) say, “useful research does not fall into a single quantitative or qualitative category”. To improve the explanatory purpose of the future study, as an alternative, mixed methods should be used for data collection. Collecting quantitative and qualitative data in parallel increases quality and reliability of results, offers greater confidence in the conclusion and a better explanation of the phenomenon under examination (Saunders et al., 2015, pp. 177-200).
Third, the survey used in this research is based on a self-designed questionnaire. Although the questionnaire was piloted and tested by the researcher on a sufficient number of respondents, to secure acceptable measurement reliability, an off-the-shelf questionnaire that is already tested and incorporates more subscale items (Meade and Craig, 2012, p. 13), could be used in an effort to secure higher reliability (Jung et al., 2009, pp. 1087-1091).

Fourth, the aim of this study was to examine the direct influence of organisational culture on TQM implementation, whereas the mechanism through which an organisation’s culture comes to have an impact on TQM implementation has not been addressed. However, some recent studies highlighted that employee readiness for change has a mediating effect on the relationship between organisational culture and TQM implementation (Haffar et al., 2013, 2017). Therefore, it would be beneficial for a future study to empirically examine the mediating role of individual readiness on the Amalgamated Model.

Finally, the survey results may suffer from “social desirability” bias which DeVaus (2013) describes as “the tendency to provide the respectable rather than the true response” (p. 107) to a given survey question or statement in a questionnaire. This is usually a weak point of any self-reported measure (Schaeffer, 2000, p. 136) that might influence equally all the indicators’ scores in this study. To address social desirability bias, it would be useful to revise the questionnaire, so that “desirable” responses are less obvious.

Note
1. A discussion of the theoretical models utilised by Green may be found in his article.

References


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