

CULTURAL INFLUENCES ON TQM IMPLEMENTATION AND FINANCIAL PERFORMANCE IN TUNISIAN FIRMS

Senda WALI, Younes BOUJELBENE

Introduction

Total Quality Management (TQM) is a management accounting technique based on the principles of leadership, customer satisfaction, employee involvement, continuous improvement, and long-term partnerships with suppliers and customers. It represents an integrative approach for today's organizations in the pursuit of continuous performance improvement and competitive advantage in both local and global markets (Dale, [16]). Recently, it has been getting a bad strike in the popular business press regarding its ability to improve financial performance. While Barker and Cagwin [5], Barker and Emery [6], Hendricks and Singhal [25], [26], York and Mirree [55] found that implementing TQM practices leads to a better financial performance, Yueng et al. [54], Waston et al. [53] failed to prove any link between TQM implementation and financial performance improvement. The controversy about the value of TQM in improving financial performance leads to consider how the existence of factors external to the implementation of TQM might affect performance.

Thus, the overall understanding of the factors that determine the successful implementation of TQM is a really complex issue that can only be achieved by integrating several research topics that analyze human, managerial, technical and contextual aspects, Fuentes-Fuentes et al. [22]. One likely reason for some of the unsuccessful TQM implementations is the possibility that TQM is culture-dependent. The contribution of this paper focuses on this approach.

As TQM implementation requires an organizational change, understanding and predicting the effect of the cultural traits on TQM implementation and success are becoming more critical factors in terms of innovation management. There are differing views on whether a culture dependent or universal approach to TQM implementation is appropriate. However, despite a lack of empirical evidence, the assumption of universal

applicability has permeated the literature with little attention being given to the culture-dependent argument, Sila [46]. Several recent studies including Prajogo and McDermott [38], Jabnoun and Sedrani [30], Santora, [43] also emphasized the corporate culture in the field of TQM. They consider it as the antecedent of TQM practices.

Hence, with the aim of studying the factors that mediate the effectiveness of TQM programs in depth, this study examines the possible influence that the cultural variables might have on its implementation and on its performance given that managing corporate culture is one of a number of important factors that makes for business success. The study will also examine how these factors affect the relationships between TQM implementation and financial performance measures. Specifically, the main purpose of this research is to determine whether corporate culture is the precursor of the main strategic TQM dimensions and whether it moderates the relationship between TQM and financial performance.

This study develops a structural equation modelling (SEM) model, where the direct effects of TQM practices implementation on measures of financial performance, as well as the effects of corporate culture on TQM implementation, are tested using survey data. This model is also tested with inclusion of moderator effects.

1. Literature review and Hypotheses

1.1 TQM and financial performance

To test the relationship between TQM and financial performance, a number of researchers have used surveys or interviews to measure financial performance by collecting respondents' opinions about the firm's financial performance. a typical example of this approach is Powell [37], who analyzed data from 36 surveys and 18 on-site interviews of public and private companies.

Financial performance was measured subjectively, using a five-item scale addressing profitability, sales, growth, and overall financial performance. This study is suggestive, but not a persuasive evidence of the link between TQM and financial performance because respondents provided only opinions about the financial performance of their own companies, rather than actual financial performance data. More specifically, Buzzell and Gale [10, pp. 107–108] claim that there is no doubt that the perceived quality and profitability are strongly related, whether the profit measure is return on sales or return on investment. Sharma [45] tested the difference in performance (objective and subjective) by the type of quality program used in Queensland businesses. He found positive correlations between the export proportion and quality management dimensions, such as benchmarking, adopting the philosophy, being closer to suppliers, executive commitment etc, suggesting that these dimensions of TQM should be given due consideration in enhancing the firm's export performance in the international markets.

While many of the aforementioned studies have significant design limitations, there are other studies that have applied more rigors to this research question with fairly good results. Hendricks and Singhal [25] have explored the impact of effective TQM implementation on the operating performance of firms over a 10-year period and found that firms winning quality awards outperformed firms in a matched control sample in terms of operating performance and sales growth. In addition, they found that these same firms were also more successful in controlling costs. In a similar study, Easton and Jarrell [20] looked at 108 firms from 32 different industries over a 5-year period after winning a quality award to determine the effect of successfully adopting TQM on firm performance. Their approach was to compare the performance of 108 TQM firms to a benchmark performance measure of predicted performance without TQM. They found that financial performance was improved for firms that adopted TQM, and the improvement was greater for firms with more advanced TQM systems. More recently, Hendricks and Singhal [24], made another significant contribution to the TQM literature by considering the impact of various firm characteristics on TQM's ability to improve financial performance. Their results are based on a sample of 435 firms. They

found that firms that have effectively implemented TQM, experience improvement in their financial performance. York and Miree [55] re examined the link between TQM and financial performance and found that both Baldrige and State quality award winners generally had better financial performance than their peers after winning a quality award, and before. Baker and Emery [6] investigated the improvement in financial performance associated with the use of the strategic business initiative TQM of 305 firms operating in the motor carrier industry. The results of multiple regression analysis showed an improvement in ROA associated with the use of such initiative.

In spite of the popularity and the success of TQM, Dixon [19] using ISO-9000 registered firms as a proxy for total quality organizations, did not show statistically significant relationships between TQM and the selected financial indicators. Yeung et al. [54] showed by means of case studies that the manufacturing companies in Hong Kong which adopt quality management systems did not show any improvement of the operating performance. Moreover, their financial performance did not show any improvement following the adoption of such system. Another research study by Watson et al. [53], based on an analysis of 3,776 firms, has found no evidence to support the assertion that the adoption of TQM practices is of financial benefit to Australian SMEs, after controlling the demographic differences in the sample.

The lack of conclusive empirical results, coupled with claims of failure in the practitioner literature, lead to the following hypothesis:

Hypothesis 1: TQM implementation has direct and positive effects on financial performance.

1.2 TQM and corporate culture

In the field of corporate management, the literature commonly refers to culture as a system of shared values and beliefs that produces norms of behavior and establishes an organizational way of life. The term corporate culture is often interchangeable with organizational culture¹ which is defined in this paper as the set of organizational practices that are seen as characteristic for an organization. It explains the nature and contours of the company and the interactions of employees, Pun et al. [41]. Corporate culture distinguishes the organization from other organizations, Meek

[36]. It is both specific to an organization and relatively constant, compared to other organizational traits, Leonard-Barton [33].

According to Liberatore [35], corporate culture resists change because it is so established and ingrained, and any attempt to change the culture may declare war on the systems. Nevertheless, corporate culture might need to be changed in order to facilitate new ways of thinking, innovate and doing business in today's dynamic market-place and turbulent environment.

Implementing TQM and its main components represents a dramatic challenge from those of traditional management. It requires a massive change in the social and technological components of a workforce. Because of its shared nature and implicit understanding about organizational norms and values, culture can have a dramatic effect on efforts to change specific procedures or processes. To manage this change successfully, Sohal et al. [50] argue that visionary strategy and restructuring must be accompanied by organizational commitment to a cultural shift. Initially, the focus may be on features of the internal environment (e.g. policies, procedures and communication) that are fairly quickly and easily introduced. However, the alternation of beliefs, assumptions and values that define the behavioural norms and expectations that determine corporate culture is both a difficult and long-term undertaking. Burrill and Ledolter [9] argue that the culture shapes the organizational structure, access to and flow of information, the patterns of behaviour, the reward systems and other aspects of the organization that make it possible to serve customers. Chu [14] adds that culture has to be internalized in the state of minds of individuals in an organization, and owing to the fact that it takes a long time to cultivate, one must start early and start correctly. Moving an organization from resistance, through inertia and passive acceptance of change to active involvement and commitment, requires highly visual leadership as a model of desired behaviour and attitudes, continuing support and reinforcement, building new work relations and cross-training. The crucial aim of such TQM-oriented changes is to attain a best fit between strategy, technology and human resources. Accompanying the changes, culture has to be cultivated; and it is a lengthy process that requires much time and patience. Several empirical studies test the relationship between TQM implementation and corporate culture.

Dellana and Hausser [17], Jabnoun and Sedrani [30] identified adhocracy and group culture to be the most supportive for TQM implementation. The adhocracy culture is characterized by creativity, risk taking, and a creative leadership, participation, and a mentoring leadership. TQM is directly influenced by organizational culture, Jabnoun [31], Hyland et al. [29].

Al-Khalifa and Aspinwall [2] investigated the degree of compatibility of the culture that exists in the industrial firms of Qatar, and that required for implementing TQM. The results indicated that many organizations in Qatar were not characterized by just one cultural type, but a mix of two, which did not match the cultural profile characteristics that support TQM. They conclude that implementing organizational culture change is not an easy task, but this assessment of the current position, using the CVF, has highlighted where changes are needed to support a total quality approach.

Sousa-Poza et al. [51] conducted an empirical study covering the state of Missouri, Germanic Switzerland, and South Africa. Applying principal component factor analysis to culture instrument resulted in four dimensions: people oriented, outward oriented, inward oriented, and task oriented. The TQM survey used in this study is based on the Malcolm Baldrige National Quality Award (MBNQA) model. Sousa-Poza et al. [51] considered the relationship between TQM practices and corporate culture to be dependent on national cultures. Using canonical correlation, their study revealed that, in Missouri, culture influences TQM dimensions of information analysis, process, and leadership. In Germanic Switzerland, inward culture was found to support human resource development while hindering leadership. In South Africa, two significant relationships were found. The first indicates that increased inward oriented and decreased task oriented cultures facilitate information analysis and hinder human resource development. The second relationship indicates that a people-oriented culture also facilitates information analysis but hinders human resource development.

Pun [40] discussed the relationship between cultural values and TQM practices in Chinese enterprises. He addressed the cultural influences on employee involvement and TQM practices. Pun [40] found that there was no strong evidence to verify the influences of Chinese culture values

on the determination of TQM adoption in the organizations studied. Then, the traditional Chinese values have no direct influence on promoting the adoption of EI/TQM practices in the organizations.

The above discussion leads to the following hypothesis:

Hypothesis 2: Corporate culture has a direct effect on TQM implementation.

The present state of the art in organizational culture research shows little convergence towards a commonly accepted conceptualization and operationalization. A major contrast is that between studies that regard organizational culture to be a process phenomenon, and that tend to focus on the deep levels of meanings, beliefs, and values, and studies that see organizational culture as a state, and focus on the more superficial levels of practices or patterns of behaviour, Ashkanasy et al. [3], Schein [44]. In view of the purpose of this paper, the second approach has been chosen, as it more readily allows for generalization over many different organizations. Questionnaires as Organizational Culture Profile, the Organizational Culture Index identified several dimensions. The diversity of cultural traits measured by current questionnaires can partly be explained by the objective used for developing each instrument. Delobbe et al. [18] found that four basic dimensions or conceptual domains appear to be common to most questionnaires. Then we expect that:

Hypothesis 3: Cultural traits or dimensions affect differently TQM implementation.

First, a people orientation reflecting perceived support, cooperation, mutual respect and consideration between organizational members is prevalent. This orientation refers for instance to the group culture quadrant of the Competing Values Model. A strong employee/people orientation may be expected to help the organization maintaining open communication with its employees.

Hypothesis 3a: Organizations with a culture characterized by a strong employee or people orientation will succeed in TQM implementation.

Second, an innovation orientation, indicating general openness to change and propensity to experiment and take risks is also apparent. It is the notion of openness to new ideas, products, processes or services. Smith et al. [49] viewed

TQM as a radical and administrative innovation. These characteristics of an innovative organizational culture may be expected to be conducive to implement TQM practices. So, a positive relationship between the innovation dimension of organizational culture and TQM implementation may be hypothesized. This dimension can be seen as the opposite of stability orientation.

Hypothesis 3b: Organizations with a culture characterized by an orientation towards innovation will succeed in TQM implementation.

Third, the open system/communication dimension may be assumed to be positively related to the ability to build and maintain high-quality relations with the stakeholders, as a climate of open critical communication enables the organization to learn from mistakes. In contrast, control orientation is focuses on the level of work formalization, the existence of rules and procedures and the importance of the hierarchy.

Hypothesis 3c: Organizations with a culture characterized by an open system/communication orientation will succeed in TQM implementation.

Finally, results/outcome orientation is another core dimension that measures the level of productivity or performance expected inside an organization. Then, it may be expected to be negatively related to the TQM implementation, since an organisation focusing too much on results, might lack the necessary patience to show any performance improvement after implementing TQM practices.

Hypothesis 3d: Organizations with a culture characterized by a strong outcome or result orientation will not succeed in TQM implementation.

It is generally believed that culture change or at least culture awareness is a necessary prerequisite for excellence and quality Lewis, [34]. In addition, Sinclair and Collins [47] advocated culture as a tool in determining organizational performance. It could provide the company with some measure of control over the business processes, Chan, [11]. Collins [15] considered TQM to be a culture-based approach to quality. Some even argued that organizations achieve acceptable business results just by instilling an appropriate quality culture without formally adopting TQM programs, Smith, Barnes, and Townsend [48], Kanji and Yui [32]. The above discussion leads to the following hypothesis:

Tab. 1: Profiles of participating firms

	Percent
Sector	
Agribusiness	14
Mechanic	15
Electronic	8
Chemicals	26
Building & glass	2
Diverse Industry	5
Number of employees	
<100	22
101-250	25
251-500	18
More than 500	5

Source: Own

Hypothesis 4: Corporate culture moderates on the relationship between TQM implementation and financial performance.

2. Methodology

2.1 The process of data collection

The data used in this study were obtained from a survey performed on certified Tunisian manufacturing firms. The purpose behind studying all types of sectors was to survey a larger number of situations and features of the environment which would not be biased by the sectorial and economic features.

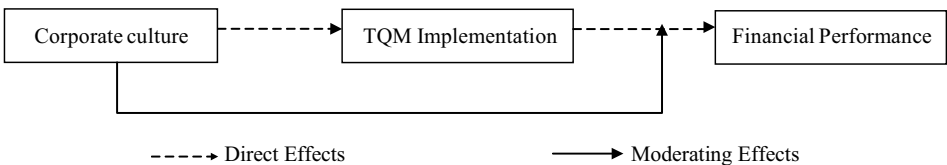
A total of 130 firms were selected taking as reference the firms that obtained a registration

for their quality management system (ISO 9000: 2000) in 2003 and 2004. Questionnaires are composed in 2 parts. The first part was sent to the quality managers who were responsible for quality. The second part is addressed to the financial director to collect financial information. The administration and the collection of the questionnaires took 6 months. The total number of questionnaires received was 84, with 70 being valid. The response rate was 53.84 %. Table 1 presents the descriptive statistics of the sample.

2.2 Development of the Research instrument

In regards to the issue of designing the survey instrument, the use of constructs has played an

Fig. 1: Conceptual model of the relationship between corporate culture, TQM implementation and financial performance



Source: own

important role in management research. Constructs or scales are defined as latent variables that cannot be measured directly, Ahire et al. [1]. Since the primary objective of this research is to examine a number of relationships rather than developing new constructs, we attempted to use pre-tested constructs from past empirical studies to ensure their validity and reliability.

2.2.1 TQM measures

Acknowledging the fact that the TQM construct is defined in numerous ways (although complementary to each other) in previous empirical studies, we decided to use a strategy where one model was selected as a skeleton or framework for the TQM construct, being supplemented by several variables derived from other models. The framework used by Samson and Terziovski [42] was selected as representing the core of TQM construct in this study for the reason that it has been used in the largest study of Australian companies so far conducted. Moreover, as argued by Samson and Terziovski [42], this model constituted the criteria of the Malcolm Baldrige National Quality Award (MBNQA) that has been accepted as representing TQM practices by several scholars such as Ahire et al. [1] and Sila [46]. MBNQA consists of six criteria of organizational practices and one criterion of organizational performance. The TQM practices embodied in the six criteria of organizational practices are leadership, strategy and planning, customer focus, information and analysis, people management, and process management.

2.2.2 Corporate culture measures

Four dimensions of culture were examined in our study: innovation versus stability orientation, results/outcome orientation, people orientation, communication orientation. This scale is developed by Beugelsdijk, Noorderhaven and Koen [8]. The questionnaire is a 23-question survey, divided into four sections, one for each culture dimension. For each question in the survey, interviewees were asked the extent to which they believed these statements in the organisations on a Likert type scale with five categories ranged from strongly agree to strongly disagree.

2.2.3 Financial Performance measures

For each firm, we identified the year when they achieve the ISO 9000: 2000 certification.

This established the year when the firm start an effective TQM implementation. Obtaining the certification need about 6–8 months to evaluate and certify the effectiveness of the management quality system. Therefore, we assumed that certification winners have an effective management quality system a year prior to the year of certification achieving.

The impact of TQM on financial performance was likely to be spread over several years because of the evolutionary rather than revolutionary nature of the changes associated with TQM, York and Miree [55]. Unfortunately, the TQM literature did not provide much theoretical or empirical guidance on what should be the appropriate length of the time period in examining performance. Our choice of the length of the time period was based on time periods typically used in studies that examined long-term performance of TQM firms. For example, York and Miree [55], Hendricks and Singhal [24], [25], [26], Barker and Cagwin [5], Waston and Jarrell [20] used a 5-year time period. In conformity with previous studies, we choose a 5-year period surrounding the effective implementation of TQM as the time period over which to measure the performance changes. For example, the relevant time period would be from 2002 to 2006 for a firm that achieved certification in 2003.

Our measures of performance were growth in sales, growth in operating income before depreciation which equals net sales less the cost of goods sold and selling and administrative expenses before depreciation is deducted, growth in operating cash flow, ROA and ROS which are defined as after-tax net income scaled by total assets and sales respectively. ROA was generally accepted as a composite financial performance variable in empirical research. Prescott [39] showed a high correlation between ROA and other profitability measures.

Our analysis focused on changes in performance over the 4 or 5-year interval rather than annual intervals. There are two reasons for this, Hendricks and Singhal [25]. First, the pattern of changes in performance could vary in time across firms and therefore may not be captured by the results of any single year. Second, the philosophy of continuous improvement is a key element of TQM. The thrust of this philosophy is on making small and incremental improvements on a regular basis, which could add up to significant improve-

Tab. 2: Sample description of 2006' financial indicators

	Sales	Assets	Operating income	Operating cash flow (OCF)	Net income	ROS	ROA
Minimum	516.5	873	-7,245	-7,352	-10,597	-0.1115233	-0.0817
Maximum	145,548	215,260	38,177	24,309	37,065	0.43182778	1.693
Median	25,050.109	31,307.114	3,232.965	2,191.358	1,525.632	0.12880349	0.2873
Std.deviation	28,462.5	38,922.4	5,507.379	4,470.640	5,107.100	0.0946	1.3168

Source: own

ments over longer time periods. In this case, the changes measured on an annual basis may be small, but could be significant when accumulated over longer intervals.

Table 2 gives summary statistics for the sample. The median firm represents a firm with sales of about TD 25050 in 2006, operating income of TD3232, and ROA of 0.28.

3. Data analysis and Results

The analysis of the model proposed is structured into three parts: (a) the data reduction process and (b) the analysis of the measurement model; and (c) the analysis of the structural model. The data reduction process aims at reducing the number of variables and parameters in the research model to a manageable number in terms of the ratio between sample size and parameters estimated in the research model. The purpose of the measurement model is to describe how well the observed indicators serve as a measurement instrument for the latent variables. Hence and for this purpose, we examined the statistical significance of factor loadings, and subsequently, the reliabilities and the extracted variances for each construct. The data proved that it was necessary to improve the model by sequentially removing those indicators with a lower individual reliability and take out the indicators with non-significant t-values. The structural relationship analysis was used to examine the relationships between the corporate culture, TQM implementation and financial performance. We use the partial least squares (PLS-Graph 3.0, Chin [12]) approach to path modeling to estimate the measurement and structural parameters in our structural equation model, Chin [12].

Unlike the covariance-based approach to structural equation modeling implemented by,

for example, LISREL, PLS path modeling is component-based and therefore does not require multivariate normal data. It places minimum requirements on measurement levels, and it is more suitable for small samples, Chin [12], Hulland [28], Tenenhaus et al. [52]. In addition, Chin [12] find that PLS path modeling is more appropriate for models that contain complex relationships and a large number of manifest variables (>25), as our conceptual model does.

3.1 Data reduction process: Scale reliability and validity

The data reduction process was conducted using exploratory factor analysis in order to bring the twelve constructs employed in this study into three composite variables. Six constructs (leadership, strategic planning, customer focus, information and analysis, people management, and process management) constituted TQM latent variables, 2 constructs (PF1 and PF2) constituted the two financial performance measures and 4 constructs constituted the organizational culture variable (COMM, RESLT, INNO, EMPL). COMM is referred to culture oriented communication, RESLT is referred to culture oriented results, INNO is referred to culture oriented innovation, EMPL is referred to culture oriented employees/people. It is important to note that these culture dimensions can coexist in the same organization and that items of communication oriented, innovation oriented or employees oriented did not contradict items included in results oriented.

In order to investigate the extent to which the aforementioned culture dimensions are shared within manufacturing firms, one-sample T test was used. The results of this test, shown in Table

Tab. 3: One sample T-test for corporate culture

Value test =3			
	Mean	t	Sig (2 tailed)
EMPL	4.2286	15.430	0.000
INNOV	3.7196	6.022	0.000
COMM	3.8600	9.533	0.000
RESULT	3.8607	9.523	0.000

Source: own

3, indicate that all dimensions have mean values higher than 3. This means that the dimensions are well shared within Tunisian manufacturing firms.

Confirmatory factor analysis (CFA) using PLS-Graph was employed for examining construct validity of each scale by assessing how well the individual item measured the scale. During the process, one item (OCF) was deleted from the financial performance scale due to poor loading to their respective latent variables.

3.1.1 Reliability analysis

The reliability analysis following the construct validity process is conducted by calculating the composite reliability for each scale. Fornell and Larcker [21] specify that composite reliability values equal to or greater than 0.7 indicate high construct reliability. The results show that the Composite reliability measure for the six TQM practices and the cultural dimensions exceed 0.8 (see table 4). Composite reliability of the two financial performance measures are 0.847 and 0.959.

3.1.2 Convergent validity analysis

Bagozzi and Phillips [4] defined convergent validity as "the degree to which two or more attempts to measure the same concept are in agreement. According to Bentler and Bonett [7], CFA can be used to assess convergent validity. In the SEM literature, an average variance extracted (AVE) equal to or greater than 0.5 is recommended for adequate model fit. Table 4 indicates that the AVE values range from 50.4 % to 92.1 %, and the loadings range from 0.681 to 0.959, indicating strong convergent validity.

3.1.3 Discriminate Validity

Discriminate validity measures the degree to which a construct and its indicators are different from another construct and its indicators. Then, a construct should share more variance with its measures than it shares with other constructs in the model, Chin [12], Howell and Aviolo [27]. So, the square root of the AVE should exceed the inter-correlations of the construct with the other constructs in the model, Fornell and Larcker [21]. In our study, none of the inter-correlations of the constructs exceed the square root of the AVE of the constructs (table 5).

3.1.4 Bi-variate Correlations

Pearson correlation was used to investigate the relationships between TQM practices and culture. Table 6 shows that the dimensions of leadership, strategic planning and employees focus and management process are significantly correlated with all cultural dimensions. Customer focus and information & analysis practices are only correlated with innovation orientation.

All TQM practices had their strongest correlation coefficient with innovation oriented. This provides some support for the results of the study of Dellana and Hausser [17] who identified adhocracy and group cultures to be most supportive of TQM implementation.

Some may question the fact that both result and employees oriented have positive correlation coefficients with all TQM practices. The answer to this question lies in the fact that these two culture dimensions are not two opposite extremes, as mentioned previously, and that TQM requires both formalization and exploration, Germain and Speers [23].

Tab. 4: Results of CFA

Variables	Dimensions	Number of Items	AVE	Composite reliability
TQM Implementation	leadership	6	0.577	0.891
	Strategic Planning	3	0.650	0.848
	Customer focus	5	0.661	0.906
	Information & Analysis	4	0.683	0.896
	Employees focus	5	0.569	0.868
	Process	4	0.550	0.830
Organizational Culture	EMPL	3	0.668	0.858
	INNO	3	0.790	0.918
	COMM	5	0.523	0.844
	RESLT	4	0.536	0.822
Financial Performance	PF1	2	0.734	0.847
	PF2	2	0.921	0.959

Source: own

3.2. Hypothesis test

As suggested by Chin et al. [13], PLS path modeling is used to estimate both the main and the

moderating effects in the model. To test the moderating hypothesis, we resorted to the two step score construction procedure suggested by Chin et al. [13]. The PLS approach allows for explicit

Tab. 5: Results of discriminate analysis

	Leader	SP	Customer	I&A	Employees focus	Process	COMM	RESLT	INNO	EMPL
Leader	0.760									
SP	0.647	0.806								
Customer	0.244	0.297	0.813							
I&A	0.309	0.297	0.328	0.826						
Employees focus	0.647	0.550	0.039	0.281	0.754					
Process	0.572	0.487	0.075	0.357	0.597	0.741				
COMM	0.581	0.421	0.133	0.133	0.477	0.330	0.723			
RESLT	0.523	0.472	0.254	0.199	0.443	0.507	0.424	0.732		
INNO	0.489	0.410	0.283	0.435	0.325	0.456	0.376	0.355	0.889	
EMPL	0.524	0.384	0.161	0.090	0.628	0.530	0.411	0.583	0.261	0.817

Source: own

Tab. 6: Correlations between TQM practices and cultural dimensions

	Leader	SP	Customer	I&A	Employees focus	Process
COMM	0.581**	0.421**	0.133	0.133	0.477**	0.330**
RESLT	0.523**	0.472**	0.254*	0.199	0.443**	0.507**
INNO	0.489**	0.410**	0.283*	0.435**	0.325**	0.456**
EMPL	0.524**	0.384**	0.161	0.090	0.628**	0.530**

** Correlation is significant at the 0.01 level (2 tailed)

* Correlation is significant at the 0.05 level (2 tailed)

Source: own

estimation of latent variable (LV) scores. After saving the standardized LV scores, we calculated the interaction terms and included them in the model. This method enabled us to test for a relatively large number of interaction effects while simultaneously correcting for measurement error, Tenenhaus et al. [52], Chin et al. [13].

To test the effects and statistical significance of the parameters in the structural model, we used a (nonparametric) bootstrapping procedure with 100 resamples, Chin, [12]. As suggested by Chin et al. [13], we employed a hierarchical approach to test our hypotheses, in which we first estimated a model with the main effects only and then added the interaction effects. We obtained the estimates that we reported next from the final model that included the interaction effects.

TQM and organizational culture are measured as a second order construct that contains respectively 6 and 4 dimensions. PLS path modeling allowed for the conceptualization of higher-order factors through its repeated use of manifest variables, Tenenhaus et al. [52]. We reported the loadings of the second-order construct in table 7. The CR and AVE calculated on the basis of these loadings still fulfill the necessary requirements with regard to the cut-off values.

3.2.1 Relationship between TQM implementation and Culture dimensions

The results of this study indicated that many organizations in Tunisia were not characteri-

Tab. 7: Results of second order CFA

	Dimensions	Loading	T-STATISTIC	AVE	Composite reliability
TQM	Leadership	0.793	17.542	0.460	0.820
	Strategic Planning	0.749	16.405		
	Customer orientation	0.170	3.896		
	Information & Analysis	0.570	10.010		
	Employees focus	0.798	14.938		
	Process orientation	0.760	11.416		
Corporate	COMM	0.715	8.294	0.537	0.819
Culture	RESLT	0.811	14.877		
	INNO	0.558	6.875		
	EMPL	0.814	9.540		

Source: own

zed by just one cultural type, but tended to be biased towards a mix of hierarchical and group characteristics, while the ideal cultural profile that supports TQM implementation should have group and developmental characteristics. For the effect of the different culture dimensions on TQM implementation, table 8 shows that only culture oriented employees and culture oriented innovati- on have a positive and significant effect on TQM implementation. Then, H3a and H3b are confir- med. These results suggest that a culture orien- ted innovation and people may be a predictor of TQM success. This provides some support for the results of the study of Dellana and Hausser [17] and Jabnoun and Sedrani [30] who identi- fied adhocracy and group cultures with greater emphasis on the commitment to experimentati- on and innovation and development of human resources to be most supportive of TQM imple- mentation. In contrast, results show that outcome orientation and communication orientation stati- stically unrelated to TQM implementation which lead to reject H3c and H3d.

3.2.2 Main and moderator effects re- sults

Table 9 shows that TQM practices implementa- tion has an insignificant and a negative effect on the first dimension of the financial performance measured by the growth of sales and the growth of operating income. However, the results reveal that TQM implementation has a negative and sig- nificant effect on the second component of the fi- nancial performance. The negative effect on ROA can be explained by the fact that the TQM prac- tices require the restructuring of the firm, Barker and Emery [6]. To make reorganization, the firm makes material investments. Therefore, the value

of its assets increases. It can cause the reduction of the ROA even though the sales and the opera- ting income increase during the same period. The negative effect on the ROS may be explained by the fact that the cost of the investment is posted in the expenses of the exercise, which reduces the operating income even though the sales incre- ase. In addition, the results show that a corpo- rate culture has a positive and significant effect on the TQM implementation. Therefore, H2 is confirmed ($R^2 = 50.6\%$). This result is confirmed by Santora [43].

Besides, the TQM implementation explains only 0.8 % of the variance of the accounting indicators (sales and operating income) and 4.7 % of the return on sales and on assets for the quality of the data. Therefore, H1 is partially rejected.

Table 10 shows the results of the structural model with including the interaction effects. The results with main effects remain unchanged. Fur- thermore, we failed to find significant interaction effects in either of the two analyses carried out with PF1 and PF2 as dependent variable. Final- ly, there are some differences in the R2 of the two moderation models. The R2 for the financial performance in the final model (including both main and interaction effects) are 11.7 % (PF1) and 33.9 % (PF2); that in the main effects only model yields 0.8 % (PF1) and 4.7 % (PF2). In accordance with the categorization of R2 effect sizes (small: 0.02; medium: 0.13; large: 0.26), we conclude that these effect sizes are large.

Using an incremental F test suggested by Chin et al. [13], we find that the ΔR^2 of 0.11 and 0.33 are statistically significant at 0.05 level. In addi- tion, we calculate f^2 to assess the effect size of the interaction terms in the final model, (Chin et al. [13]), and the results suggest a small to large effect size (0.012, 0.22, 0.662).

Tab. 8: Relationship between corporate culture dimensions and TQM implementation

Relationship	β	T-Student	R^2
Culture oriented Employees → TQM implementation	0.292	2.5168**	0.480
Culture oriented Innovation → TQM implementation	0.422	3.6910**	
Culture oriented results → TQM implementation	0.033	0.2755	
Culture oriented Communication → TQM implementation	0.141	1.3194	

** Significant at 0.05 level

Source: own

Tab. 9: Structural model with main effects

Effect of	Effect on	β	T-Student	R ²
TQM Implementation	PF1	-0.087	0.576	0.8 %
TQM Implementation	PF2	-0.217	1.885*	4.7 %
Organizational culture	TQM Implementation	0.626	7.630**	50.6 %

** Significant at the 0.01 level

** Significant at the 0.05 level

Source: own

4. Conclusion

This paper provides evidence on the relationship between the financial performance, the effective implementation TQM and corporate culture. The causal model proposed allows us to analyze if the organizational culture influences the implementation of the basic principles of TQM, and if it moderates the relationship between TQM practices and financial performance. In general terms, the results indicate support for the positive relationship between corporate culture and TQM implementation. In addition, the positive relationship between innovation orientation and TQM implementation suggests that firms with a culture that reflects openness to change, to new ideas, products, processes are better in introducing TQM practices. This finding is consistent with the idea that employees in innovation-oriented companies are faced with conditions that enable and motivate them to perform. The lack of a significant relationship between results orientation and TQM implementation is not a surprising result because a result orientation in a firm might limit the development of the long-term view that is often needed in TQM implementation. The findings from our analysis form a first step to an

understanding of the factors that cause some firms to be better able to implement TQM practices than other firms.

Likewise, TQM implementation has a negative impact on ROA and ROS. In particular, the results indicate that implementing the TQM practices require a long period to show improvements in the financial performance. Thus, some improvements can be immediate on the organizational efficiency, like customer satisfaction, costs of non-quality and rework reduction. These findings support the previous findings of Hendricks and Singhal [25], York and Miree [55] who have found that the improvement of the financial performance following TQM implementation did materialize after a 5-year period. On the other hand, this negative effect of TQM implementation may be explained by the fact that TQM implementation is an expensive immaterial investment. Therefore, firms need a certain period to cover the cost of this investment.

The main limitation of this study may be linked to the sample size. This size, however, is considered reasonable given the size of the Tunisian manufacturing sector and the confidentiality of the financial information in the Tunisian context.

Tab. 10: Structural model with moderator effects

Effect of	Effect on	β	T-Student	R ²	$f^2=2(\Delta R^2)$
Organizational culture	TQM Implementation	0.626	6.415**	51.2 %	0.006*2= 0.012
TQM	PF1	-0.071	0.681	11.7 %	0.11*2=0.22
TQM	PF2	-0.038	0.323	33.9 %	0.331*2=0.662
TQM*culture	PF1	-0.163	0.876		
TQM*culture	PF2	0.177	1.0004		

** Significant at the 0.01 level

Source: own

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Senda WALI

Doctor in Accounting
University of Sfax
Sfax Faculty of Economics and Management
Department of Accounting
Route menzel chaker km 3.5, 3013, Sfax
Tunisia
wali_sonda@yahoo.fr

Younes BOUJELBENE

Doctor in economic sciences
University of Sfax
Sfax Faculty of Economics and Management
Department of Economics
Route de l'aérodrome km 4.5, BP 3018, Sfax
Tunisia
Younes.boujelbene@yahoo.fr

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ABSTRACT**CULTURAL INFLUENCES ON TQM IMPLEMENTATION AND FINANCIAL PERFORMANCE IN TUNISIAN FIRMS****Senda Wali, Younes Boujelbene**

Some recent studies have also advocated that an organization could achieve better performance and higher efficiency through establishing right quality culture. Implementing TQM and its main components represents a dramatic challenge from those of traditional management. It requires a massive change in the social and technological components of a workforce. This study examines the relationships between corporate culture, TQM implementation and financial performance of Tunisian manufacturing firms. The model is tested using structural equations, surveying 70 Tunisian firms. The causal analysis results show no significant and direct effect of TQM implementation on Sales and operating income growth, but a negative and significant direct effect of TQM implementation on ROA and ROS. Furthermore, results show a positive and a significant relationship between corporate culture and the TQM implementation. This study also assessed the culture dimensions shared among Tunisian manufacturing firms and investigates their relationship with TQM practices. Successful adoption of TQM practices lies largely on a culture oriented innovation characterized by an openness to change, propensity to experiment and take risks and culture oriented people reflecting perceived support, cooperation, mutual respect and consideration between organizational members. The results suggested that there was no strong evidence to verify the moderator effect of the corporate culture on the relationship between TQM implementation and financial performance. The key managerial implications of these results are that firms shouldn't get disillusioned with TQM when short-term improvements did not materialize given that TQM implementation is an expensive immaterial investment and that many cultural traits affect the benefits of effective TQM implementations.

Key words: total quality management implementation, corporate culture, financial performance, path analysis.

JEL classification: M14, M41, L25.