

The Role of Organizational Culture in Adopting Total Quality Management Case Study: The Salt Complex, El Outaya, Biskra State

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ABSTRACT:

This study aimed at exploring how the organizational culture can contribute in adopting Total Quality Management (TQM) in the organization. A case study was conducted at the Salt complex in El Outaya, Biskra State and the questionnaire was used to collect data. The study found that the organizational culture (organizational values, organizational behavior and the artifacts) contributes in adopting TQM with its four dimensions (top management leadership commitment, focus on the customer, focus on human resources and continuous improvement). All of the organizational culture's dimensions can increase the top management leadership commitment towards TQM, they also contribute in focusing on the customer. Moreover, organizational culture contributes in increasing the focus on human resources through organizational behavior and artifacts. In addition, organizational culture can help sustain continuous improvement through artifacts and organizational values.

Keywords: *TQM, Organizational culture, Top management leadership commitment, Focus on the customer, Focus on human resources, Continuous improvement, Organizational values, Organizational behavior, The artifacts*

INTRODUCTION

Total Quality Management (TQM) is one of the topics that continuously consider organizations. It is related to how to achieve quality not only in products and services, but also in all the functions and activities carried out in the administrative departments and across organizational levels. This has led TQM to be spread and developed during the past years. Objectives and even types of the organizations may differ, but the achievement of customer satisfaction remains constant and continuous as long as organizations continue to live. Therefore TQM derives a strategic importance for the organization; it is a philosophy aimed at achieving customer satisfaction in the first place.

Since it represents an integrated management philosophy rather than a program or a plan, TQM requires the organization to look at how this philosophy can be established and turned to be an organizational lifestyle that is always associated with the identity of the organization, and this can only be achieved through the appropriate organizational culture.

Many of TQM pioneers emphasize that TQM is complemented only by an organizational culture that stresses on quality in everything within the organization. Crosby considers that "Quality is the result of an accurately constructed culture." Kanji (1996) asserts that TQM requires quality to be "a way of life" and

"TQM is an organization's culture committed to delivering customer satisfaction through continuous improvement". So, If TQM means specific tools and methods of management that need to be applied, it also requires the appropriate culture that supports those tools and methods to make TQM more than just a program to be implemented.

Organizational culture is the key to make TQM an organizational lifestyle, it is a guiding philosophy with an intellectual system that should be adopted by all employees in different organizational levels. All of that gives organizational culture its importance in adopting TQM and prepares for the main problematic: 'How can the organizational culture contribute in adopting TQM?' This main problematic is followed by the following questions:

- ✓ How do organizational values contribute in adopting TQM?
- ✓ What types of organizational behavior are appropriate to adopt TQM?
- ✓ What are the appropriate artifacts for TQM?

To answer these main problematic and questions, the following main hypothesis and four sub-hypotheses were put to investigate:

H: *Organizational culture contributes in adopting TQM in the organization through: organizational values, organizational behavior and artifacts.*

- ✓ **H.1:** *Organizational culture makes top management leadership committed to TQM;*
- ✓ **H.2:** *Organizational culture can raise the focus on the customer;*
- ✓ **H.3:** *Organizational culture contributes in human resource development towards TQM;*
- ✓ **H.4:** *Organizational culture enables to maintain continuous improvement.*

Literature Review

This section contains a theoretical background of the study variables, which are TQM and organizational culture, and their dimensions.

Total Quality Management (TQM) Definitions

Total Quality Management (TQM) is a holistic concept that considers quality in everything carried out in the organization. Madu (1998) defines TQM as "an organization-wide

quality program to continuously improve products and services delivered to customers by developing supportive organizational culture and implementing statistical and management tools". TQM is also a management philosophy and business strategy intended to embed quality improvement practices deeply into the fabric of the organization (Cooper and Argyris, 1998).

The British Quality Association gives a more holistic definition for TQM: (Peratec, 1994)

"Total Quality Management is a corporate business management philosophy which recognizes that customer needs and business goals are inseparable. It is applicable within both industry and commerce. It ensures maximum effectiveness and efficiency within a business and secures commercial leadership by putting in place process and systems which will promote excellence, prevent errors and ensure that every aspect of the business is aligned to customer needs and the advancement of business goals without duplication or waste of effort by releasing the full potential of all employees ..."

Those definitions and others emphasize that TQM does not seem to be just programs and plans, rather, it implies on a management philosophy that requires all employees in all functions of the organization to maintain quality not just in products and services, but also in everything that can be done in the organization, and that is how TQM is established.

Dimensions of TQM

There are many dimensions can be used to describe TQM. This study used four TQM dimensions which appeared in all TQM models the most. They are: top management leadership commitment, focus on the customer, focus on human resources and continuous improvement.

Top Management Leadership Commitment

There is a consensus that commitment of top management leadership towards TQM has a crucial role in establishing TQM. Kanji (1998) describes leadership as "a prerequisite for putting TQM principles and core concepts into practice. Management at all levels must understand TQM in-depth and show their commitment through outlining quality goals, policies, principles and plans." Furthermore, Juran argues that at least 85 percent of the failures in any organization are the fault of

systems controlled by management, and fewer than 15 percent of the problems are actually worker related (Ulle adn Kumar, 2014).

There are several roles for top management leadership to adopt TQM in the organization, such as the following (Goetsch & Davis, 2014):

- ✓ **Aligning personnel with the vision:** i.e. to cascade the organization's vision about TQM to all employees in all functions;
- ✓ **Providing a sense of direction:** Leaders must make the vision clear and help employees understand the organization's mission and goals;
- ✓ **Communicating effectively and often:** Leaders must make sure that necessary information and their channels are available;
- ✓ **Empowering:** Employees should be given some autonomy to carry out their jobs and duties;
- ✓ **Training:** It is vital for TQM; employees must learn TQM techniques and how to maintain continuous improvement.

Focus on the Customer

Customer is the most important thing that may consider the organization ever. Drucker (1986) states that "there is only one valid definition of business purpose: *to create a customer*". Juran and Godfrey (1999) define a customer as "anyone who is affected by the product or by the process used to produce the product." American Society for Quality (ASQ) found that customers deem a product or service of high quality based on six factors (Gupta and Valarmathi, 2009):

1. **Performance:** i.e. fitness for use. It also includes availability, reliability and maintainability;
2. **Features:** i.e. the product's secondary characteristics like: color, size, packing, etc.;
3. **Service:** Customers care about services delivered with products, bad services may affect negatively the purchase decision even if the product is of high quality;
4. **Warranty:** the organization assure its product with quality and warranty, and this is called 'reliability', it encourages customers to prefer and obtain a product over the other ones;
5. **Price:** It directly affects the purchase decision, the product must possess 'value for money';

6. Reputation: Quality and reputation are correlated; customers tend to obtain products from high reputation organizations.

Focus on Human Resources (HR)

As customers are important externally, the human resources (HR) are also of no less importance internally. Juran and Godfrey (1999) confirm that the main components of TQM are deeply related with HR, and adopting TQM requires good human relations. So, HR development is prerequisite for TQM. There are many initiatives to focus on HR such as the following:

- ✓ **Training:** Training for TQM is inevitable, it aimed at: maintaining high performance from the first time, reducing errors, achieving continuous improvement and self-control, etc.;
- ✓ **Empowerment:** Kanji (1995) states that "empowerment simply means encouraging people to make decisions and initiate actions with less control and direction from their manager.";
- ✓ **Communications:** they are "part of the cement that holds together the bricks of the TQM process supporting the principle of people-based management." (Kanji & Asher, 1996);
- ✓ **Employee satisfaction:** Without employees satisfaction, the organization will never satisfy its customers (Fukui et al., 2003). So, employee satisfaction is essential for TQM.

Continuous Improvement

In Japan, the term 'continuous improvement' is synonymous to '*Kaizen*' which is composed from two Japanese words: '*Kai*' means 'change', and '*Zen*' means 'good'. So, '*Kaizen*' means the change to the better. Continuous improvement is simply bit-by-bit improvement in practices and day-to-day accumulation of the results which are implemented as participative activities at workplaces (Bird, 2002).

There so many techniques for continuous improvement such as quality control circles, cross-functional teams, the five 'S', the six sigma, zero defects, etc. Kaizen can be internal in order to develop HR, use resources efficiently and effectively and then reduce costs. It also can be external for high quality products, good

services, then satisfied customers and a bigger market share.

Organizational Culture

The organizational culture is a good way to discover and understand the way of life inside organizations. It can explain the mission and objectives, the organizational behavior, leadership styles and many initiatives and practices.

Definitions

Organizational or corporate culture is a system of shared actions, values, and beliefs that develops within an organization and guides the behavior of its members (Schermerhorn Jr et al., 2002). In more details, it means “the collection of traditions, values, policies, beliefs, and attitudes that constitute a pervasive context for everything we do and think in an organization” (Mullins, 2010).

Schein (2010) gives a holistic definition for organizational culture; it is “a pattern of shared basic assumptions learned by a group as it solved its problems of external adaptation and internal integration, which has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems”.

Dimensions of Organizational Culture

For the purposes of this study, organizational values, organizational behavior and artifacts were chosen to describe organizational culture.

Organizational Values

Organizational values represent the intangible aspects of organizational culture. They refer to the important principles that guide the behavior of the organization and are communicated and rewarded within the organization (Paarlberg and Perry, 2007).

There are many classifications of organizational values such as: work values and ethical values, terminal values instrumental values. Work values are those related to the particularity of the work, it contain intrinsic work values and extrinsic work values that consider results of the work. Ethical values are those related to personal convictions about what is right and wrong during carrying out the job.

In the other classification, terminal values represent the future position or output that the organization wants, like excellence, high quality, customer satisfaction, etc. Instrumental values refer to aspects of organizational behavior or climate needed, like persistence, respecting authority, honesty, taking initiatives, etc.

Organizational Behavior

The organizational behavior is a translation of the values into actions. Kondalkar (2007) states that “organizational behavior is a field of study that investigates the impact that individuals, groups and organizational structure have on behavior within the organization, for the purpose of applying such knowledge towards improving an organizational effectiveness”. Organizational behavior can be defined as “the study and application of knowledge about human behavior related to other elements of an organization such as structure, technology and social systems” (Kondalkar, 2007).

In the organization, there are two levels of organizational behavior: individual and group behavior. The individual behavior is the basic one that affects the group and organizational behavior. It is shaped by four elements: motivation, ability, role perceptions and situational factors. There are five types of individual behavior; they are: (McShane and Von Glinow, 2010)

1. Task performance: It means the behavior aiming at achieving goals and objectives;

2. Organizational citizenship: It means that the employee is high committed to the organization, he is ready to help coworkers in their duties, and establish a friendly climate;

3. Counterproductive work behaviors: They are a negative type of behaviors, such as abusing others, negligence at work and erroneously accomplishing tasks, etc.;

4. Joining and staying with the organization: It explains how the employee is committed and loyal to the organization. This type of behavior is highly needed by organizations;

5. Maintaining work attendance: This is about ‘absenteeism’; the organization must make sure that absenteeism is not a behavioral phenomenon. Otherwise, it should take necessary actions.

The group behavior is also of importance; often, the teamwork is preferred over individual work because the former one has many merits for the organization. Employees may exchange their knowledge with each other; communications exist in teamwork as well as synergy, etc.

In TQM, the group behavior can be noticed in terms of cross-functional teams, quality circles, work teams, solving-problem-teams, etc. the group behavior is suitable rather than the individual behavior for TQM.

Artifacts

Artifacts are the tangible aspects of organizational culture. They are defined as everything that can be seen or felt in the organization, and usually they are the first thing we notice when we walk into the organization the first time (Keyton, 2005). Gallos and Schein (2006) named some categories for identifying artifacts, they are: dress code; level of formality in authority relationships; working hours; meetings (how often, how run, timing); how are decisions made?; communications: how do you learn stuff?; social events; jargon, uniforms, identity symbols; rites and rituals; disagreements and conflicts: how handled?; balance between work and family.

For TQM, artifacts can be established in terms of organizational systems and procedures, and communications. Systems and procedures are the real application of the intangible aspects of culture. Values and beliefs are not enough to establish TQM, they are of no use until the right systems and procedures are applied, such as: TQM models, CRM, training for quality and continuous improvement methods, etc.

Communications seem to be an important aspect of artifacts (Gallos and Schein, 2006). Oakland (2004) states that there is four stages to ensure the 'effective communication':

1. Plan: i.e. to assesses the communication needs of the organization and liaises with divisional directors, managers or local management teams to ensure that the communication plans are in alignment with overall policy and strategy;

2. Do: A comprehensive mix of diverse media is used to support effective communication throughout their organization;

3. Check: Quality steering or review committees, people surveys, appraisal and company-wide self-assessment are used to review the effectiveness of the communications process;

4. Improve: The results of the various review processes highlight areas for improvement and results are verified by benchmarking against, for instance, a national survey.

Case Study

The case study was conducted at the salt complex, El Outaya, Biskra State. The questionnaire was used to collect data from the universe. Procedures and statistical methods are described in this section as follows.

Determining the Number of Respondents (Sampling Procedures)

According to Saunders et al. (2009), the sample size from which data are collected can be defined by two equations. The first one is about determining 'the minimum size required' from respondents. The equation's formula is:

$$n = p\% \times q\% \times \left[\frac{z}{e\%} \right]^2$$

where:

- ✓ n is the minimum sample size required;
- ✓ $p\%$ is the proportion of respondents belonging to the specified category;
- ✓ $q\%$ is the proportion not belonging to the specified category, so: $q\% = 1 - p\%$;
- ✓ z is the z value corresponding to the level of confidence required;
- ✓ $e\%$ is the margin of error required.

The second equation depends on the former one to specify 'the adjusted minimum size' of the sample size. The equation's formula is:

$$\hat{n} = \frac{n}{1 + \left(\frac{n}{N} \right)}$$

where:

- ✓ \hat{n} is the adjusted minimum sample size;
- ✓ n is the minimum sample size (as calculated in the first equation);
- ✓ N is the total population.

Depending on all of that, the required minimum number of the respondents that must be studied in the complex is determined in table (1).

Table 1: Determining the required minimum size of respondents

Company	The minimum size required	Application	Result
The salt complex	$n = p\% \times q\% \times \left[\frac{z}{e\%}\right]^2$	$n = 50 \times 50 \times \left[\frac{1.96}{5}\right]^2$	385

Source: by the researcher.

Table 2: Determining the required adjusted minimum size of respondents

Company	The adjusted minimum size	Application	Result
The salt complex	$\hat{n} = \frac{n}{1 + \left(\frac{n}{N}\right)}$	$\hat{n} = \frac{385}{1 + \left(\frac{385}{104}\right)}$	82

Source: by the researcher.

Table 1 shows that the minimum number required of the respondents in the salt complex is 385, where:

- 50% is the proportion belonging to the specified category;
- 95% is the chosen level of confidence that helps define the z value and $e\%$.

In addition, the required adjusted minimum size of the respondents is illustrated in table (2):

So, table 2 shows that the required adjusted minimum size of respondents in the salt complex is 82 employees. To maintain this number, the whole universe (104 employees) was targeted; 96 questionnaires were deployed over the employees, 90 questionnaires were restored and four (04) questionnaires were excluded due to invalidity for study, which left 86 valid questionnaires to analyze and discuss the findings, and it is bigger than the required adjusted minimum size of respondents (82).

Data Collection Tool

The questionnaire was used as the data collection tool in order to find answers to the problematic put to this study. This tool contained the study variables, it is divided into two axes:

1. The first axis describes the organizational culture variable, and includes 21 sentences deployed over the three dimensions of this variable as the following:

- a. organizational values:** from sentence 1 to 8;
- b. organizational behavior:** from sentence 9 to 15;
- c. Artifacts:** from sentence 16 to 21.

2. The second axis is for TQM and includes 33 sentences deployed over the four dimensions of this variable as the following:

- a. Top management leadership commitment:** from sentence 22 to 30;
- b. Focus on the customer:** from sentence 31 to 39;
- c. Focus on the human resources:** from sentence 40 to 47;
- d. Continuous improvement:** from sentence 48 to 54.

The employees' answers of the questionnaires were scaled from 1 to 5 according to the fifth Likert scale:

- 1. Totally disagree:** If the general tendency is between [1 , 1.8[;
- 2. Disagree:** If the general tendency is between [1.8 , 2.6[;
- 3. Neutral:** If the general tendency is between [2.6 , 3.4[;
- 4. Agree:** If the general tendency is between [3.4 , 4.2[;
- 5. Totally agree:** If the general tendency is between [4.2 , 5[.

Table 3: Correlation coefficient between each phrase in the organizational culture axis and its dimension

Dimension	Phrase no	Phrase	Correlation coefficient
Organizational values	1	Top management works on establishing quality values for employees.	0.767**
	2	Top management changes ideas and work methods in order to be supportive of organizational culture.	0.802**
	3	The organization is responsible towards customers and has integrity to improve the relationship with him.	0.701**
	4	I think management is fair to everyone in the complex.	0.636**
	5	Dealing with the supervisor is based on social relations rather than professional relationships.	0.719**
	6	Top management emphasizes teamwork to accomplish various tasks.	0.625**
	7	I have the opportunity to learn from my colleagues and supervisors.	0.366**
	8	I have a permanent readiness to develop my skills to serve the organization.	0.408**
Organizational behavior	9	Supervisors stress need for me to be ethical in order to get the job done.	0.497**
	10	Supervisors tell me how to think about the job to master it.	0.575**
	11	I try to show positive behavior towards my colleagues so we can perform the tasks efficiently and effectively.	0.734**
	12	Sometimes, I help my colleagues complete their jobs.	0.742**
	13	I try to abide by my responsibilities until I master the job.	0.616**
	14	I can communicate with any employee in the organization.	0.711**
	15	I think that teamwork is useful in continuously improving the various tasks I do.	0.637**
Artifacts	16	There are plans and programs applied in order to improve products and internal operations.	0.447**
	17	There are plans and programs related to the interest of the institution to the customer, such as "the relationship with the customer.	0.684**
	18	The organization trains and develops capabilities of the staff and prepares the appropriate training courses.	0.683**
	19	The organization provides high-level training programs to increase our operational capabilities.	0.759**
	20	The organization has information technologies among management, employees and customers.	0.796**
	21	There are work teams that meet regularly to address various problems in the organization.	0.690**

Source: SPSS outputs.

Testing Validity of the Measurement Tool Reliability

Reliability assumes that the measurement tool gives the same degree when measurement process is repeated. There are a number of statistical methods to measure the reliability, one of the most common of them is Cronbach alpha " α ". It depends on the stability of internal consistency and gives an idea about the consistency of questionnaire's questions with the dimension they belong to. The total " α " value of

the questionnaire has reached 91.9%¹, which is good because it is bigger than the least acceptable value (70%) (Morgan et al., 2011).

Internal Consistency

Internal consistency of the data collection tool has been confirmed by calculating Pearson's correlation coefficient between each phrase and the dimension it belongs to. It is shown in tables 3 and 4.

1- SPSS outputs

Table 4: Correlation coefficient between each phrase in TQM axis and its dimension

Dimension	Phrase no	Phrase	Correlation coefficient	
Top management leadership commitment	22	Top management assures that everyone is concerned about quality	0.439**	
	23	Top management urges us to constantly focus on work to master it	0.587**	
	24	Leaders strive to make necessary changes to improve product and work quality	0.679**	
	25	Top management is concerned with interests of employees, customers and the organization as a whole	0.699**	
	26	I learn from my supervisor about ethical values and job mastery	0.694**	
	27	The supervisor tells me about the importance of my role in achieving the goals of our organization	0.572**	
	28	During work, I focus more on preventing errors before production, rather than detecting errors and defects after production	0.542**	
	29	There are standards I use to measure the quality of the work I do	0.602**	
	30	I think the management is concerned with international quality standards (like ISO) and is trying to apply them	0.429**	
	Focus on the customer	31	Customer satisfaction is the organization's most important goal	0.523**
32		I think the organization is committed to a thorough understanding of its customers' needs	0.632**	
33		I believe that the customer is fully respected by the organization	0.726**	
34		I believe that the organization provides its customers with correct information about the product	0.605**	
35		I believe that the organization has a good reputation in the market, and always works to preserve it	0.510**	
36		I am willing to make extra efforts to achieve quality in products and tasks	0.573**	
37		I seek to get information about customers to use them in my daily tasks	0.624**	
38		I am convinced of the organization's goals and customer concerns	0.697**	
39		The organization provides the necessary technology to contact the customer (telephone, mail, internet ...)	0.696**	
Focus on the human resources		40	I have good relations with my colleagues in the workplace	0.603**
	41	I care about my colleagues' opinions and advices about my performance	0.689**	
	42	I learn from experienced colleagues how to think about the work to master it	0.658**	
	43	In my workplace, tasks are accomplished by cooperation and éspit-de-corps	0.475**	
	44	Training programs can help me to have more control over my activities	0.633**	
	45	I believe that the organization has contributed to the development of my skills	0.687**	
	46	I see that communication between management and employees is important to convey the organization's message about quality	0.746**	
	47	Meetings among management, employees and even customers are important to develop the employees skills	0.753**	
	Continuous improvement	48	The organization is willing to improve product quality and internal processes	0.638**
		49	In the organization, we consider problems as opportunities to learn, develop and improve product quality and various processes	0.719**
50		Top management does not tend to use threats and punishment in dealing with me (i.e., there is no culture based on fear of management)	0.769**	
51		I believe that top management is committed to recognizing and rewarding employees' achievements	0.683**	
52		The organization encourages creativity and all new ideas and solutions offered by employees	0.731**	
53		I meet periodically with my colleagues and leaders to address how to improve the quality of our products and processes	0.600**	
54		The organization continuously compares its products with competitors' products in order to improve them	0.746**	

Source: SPSS outputs.

Tables 3 and 4 that all the phrases in each dimension are significant at the level 0.01. That proves the internal consistency between the phrases and their dimensions in each axis.

Results of the Field Study

Table 5 shows the mean and standard deviation related to the respondents' answers about the study's two variables, as well as the acceptance level for each dimension and their rankings.

Table 5 shows that all of the dimensions of both the organizational culture and TQM are available in the salt complex and most of them have a high acceptance level. In the organizational culture variable, organizational behavior was the most available dimension with a mean equals to 3.7027, followed by organizational values with a mean equals to 3.6279 and the artifacts with a medium acceptance level and a mean equals to 3.3566.

As for TQM, the most available dimension was the focus on the human resources with a mean equals to 3.8387. The focus on the customer was in the second place with a mean

equals to 3.5879, followed by top management leadership commitment with a mean equals to 3.5452 then continuous improvement in the last place with a medium acceptance level and a mean equals to 3.3056.

Testing Hypotheses

After confirming the presence of the organizational culture and TQM all along with their dimensions, the study main problematic can be verified through testing the four sub-hypotheses.

Testing Sub-Hypothesis H₁

The first sub-hypothesis that assumes: '*H₁: Organizational culture makes top management leadership committed to TQM*' will be tested through correlation coefficient between organizational culture and top management leadership commitment and the analysis of variance of regression (ANOVA), then the 't' test will be set to either accept or refuse H₁. Table 6 shows Pearson correlation coefficient between organizational culture and top management leadership commitment.

Table 5: Respondents' tendency about organizational culture and TQM dimensions

Variables	Dimensions	Mean	Standard deviation	Acceptance level	Ranking
Organizational culture	Organizational values	3,6279	0,66365	High	2
	Organizational behavior	3,7027	0,64976	High	1
	Artifacts	3,3566	0,73126	Medium	3
TQM	Top management leadership commitment	3,5452	0,60442	High	3
	Focus on the customer	3,5879	0,59038	High	2
	Focus on the human resources	3,8387	0,63907	High	1
	Continuous improvement	3,3056	0,78801	Medium	4

Source: By the researcher based on SPSS outputs.

Table 6: Pearson correlation coefficient between organizational culture and top management leadership commitment

Variable and dimensions	correlation coefficient	Significance level
Organizational values	0.496**	0.000
Organizational behavior	0.300**	0.000
Artifacts	0.612**	0.000
Organizational culture	0.625**	0.000

** Correlation is significant at 0.01
Source: By the researcher based on SPSS outputs.

Table 6 shows that the overall correlation coefficient between organizational culture and top management leadership commitment is 0.625. This correlation is medium but positive and significant at 0.01. Also, all of the organizational culture's dimensions are significantly correlated with top management leadership commitment but with varied intensities. This means that those dimensions can explain how organizational culture contribute in adopting TQM through top management leadership commitment, and this is discussed in findings discussion.

In addition, table 7 shows the analysis of variance of regression (ANOVA) between organizational culture and top management leadership commitment.

Table 7 shows that the (F) value is 53.948 at 0.000 significance level, this level is less than 0.05, which refers to a significant linear effect of

organizational culture on top management leadership commitment.

The results of Pearson correlation coefficient and analysis of variance of regression (ANOVA) allow to make the 't' test on H₁, that is shown in table 8 where:

- ✓ **H_{1.0}**: *Organizational culture does not make top management leadership committed to TQM;*
- ✓ **H_{1.1}**: *Organizational culture makes top management leadership committed to TQM.*

Table 8 shows that the 't' value equals to 7.345 at 0.000 significance level, this level is less than 0.05 which refuses the Null hypothesis H_{1.0} and confirms the alternative hypothesis H_{1.1}. So, it is true that '*Organizational culture makes top management leadership committed to TQM*'.

Table 7: Analysis of variance of regression (ANOVA) between organizational culture and top management leadership commitment

Model	Sum squares	Degrees of freedom	Mean squares	(F) value	Significance level
Regression	12,144	1	12.144	53,948	0.000
Error	18,909	84	0.225	-	-
Sum	31,053	85	-	-	-

Source: By the researcher based on SPSS outputs.

Table 8: The 't' test on H₁

Model	Non-standard factors		Standard factors	t test values	Significance level
	A	Standard error	Bêta		
Constants	0.945	0.358		2.642	0.010
Organizational culture	0.730	0.099	0.625	7.345	0.000

Source: By the researcher based on SPSS outputs.

Table 9: Pearson correlation coefficient between organizational culture and focus on the customer

Variable and dimensions	correlation coefficient	Significance level
Organizational values	0.325**	0.002
Organizational behavior	0.406**	0.000
Artifacts	0.518**	0.000
Organizational culture	0.553**	0.000

** Correlation is significant at 0.01

Source: By the researcher based on SPSS outputs.

Testing Sub-Hypothesis H.2

The second sub-hypothesis that assumes: ‘**H.2:** Organizational culture can raise the focus on the customer’ will be tested through correlation coefficient between organizational culture and focus on the customer and the analysis of variance of regression (ANOVA), then the ‘t’ test will be set to either accept or refuse H.2. Table 9 shows Pearson correlation coefficient between organizational culture and focus on the customer.

Table 9 shows that the overall correlation coefficient between organizational culture and focus on the customer is 0.553. This correlation is medium but positive and significant at 0.01. Also, all of the organizational culture’s dimensions are significantly correlated with focus on the customer but with varied intensities. This means that those dimensions also can explain how organizational culture contribute in adopting TQM through focus on the customer.

In addition, table 10 shows the analysis of variance of regression (ANOVA) between organizational culture and focus on the customer.

Table 10 shows that the (F) value is 36.908 at 0.000 significance level, this level is less than 0.05, which refers to a significant linear effect of organizational culture on focus on the customer.

The results of Pearson correlation coefficient and analysis of variance of regression (ANOVA)

allow to make the ‘t’ test on H.2, that is shown in table (11) where:

- ✓ **H.2.0:** Organizational culture cannot raise the focus on the customer;
- ✓ **H.2.1:** Organizational culture can raise the focus on the customer.

Table 11 shows that the ‘t’ value equals to 6.075 at 0.000 significance level, this level is less than 0.05 which refuses the Null hypothesis H.2.0 and confirms the alternative hypothesis H.2.1. So, ‘Organizational culture can raise the focus on the customer’.

Table 11 shows that the ‘t’ value equals to 6.075 at 0.000 significance level, this level is less than 0.05 which refuses the Null hypothesis H.2.0 and confirms the alternative hypothesis H.2.1. So, ‘Organizational culture can raise the focus on the customer’.

Testing Sub-Hypothesis H.3

The third sub-hypothesis that assumes: ‘**H.3:** Organizational culture contributes in human resource development towards TQM’ will be tested through correlation coefficient between organizational culture and human resource development and the analysis of variance of regression (ANOVA), then the ‘t’ test will be set to either accept or refuse H.3. Table 12 shows Pearson correlation coefficient between organizational culture and human resource development.

Table 10: Analysis of variance of regression (ANOVA) between organizational culture and focus on the customer

Model	Sum squares	Degrees of freedom	Mean squares	(F) value	Significance level
Regression	9.044	1	9.044	36.908	0.000
Error	20.583	84	0.245	-	-
Sum	29.626	85	-	-	-

Source: By the researcher based on SPSS outputs.

Table 11: The ‘t’ test on H.2

Model	Non-standard factors		Standard factors	t test values	Significance level
	A	Standard error	Bêta		
Constants	1.344	0.373	-	3.601	0.001
Organizational culture	0.630	0.104	0.553	6.075	0.000

Source: By the researcher based on SPSS outputs.

Table 12 shows that the overall correlation coefficient between organizational culture and human resource development is 0.312. This correlation is weak but positive and significant at 0.01. Organizational behavior had a significant correlation with human resource development at 0.002 (0.334**), and artifacts had a significant correlation with it but at 0.017 (0.257*) whereas organizational values had no significant correlation with human resource development.

In addition, table 13 shows the analysis of variance of regression (ANOVA) between organizational culture and human resource development.

Table 13 shows that the (F) value is 9.039 at 0.003 significance level, this level is less than 0.05, which refers to a significant linear effect of

organizational culture on human resource development.

The results of Pearson correlation coefficient and analysis of variance of regression (ANOVA) allow to make the 't' test on H₃, that is shown in table 14 where:

✓ **H_{3.0}**: *Organizational culture does not contribute in human resource development towards TQM;*

✓ **H_{3.1}**: *Organizational culture contributes in human resource development towards TQM.*

Table 14 shows that the 't' value equals to 3.007 at 0.003 significance level, this level is less than 0.05 which refuses the Null hypothesis H_{3.0} and confirms the alternative hypothesis H_{3.1}. So, '*Organizational culture contributes in human resource development towards TQM*'.

Table 12: Pearson correlation coefficient between organizational culture and human resource development

Variable and dimensions	correlation coefficient	Significance level
Organizational values	0.120	0.272
Organizational behavior	0.334**	0.002
Artifacts	0.257**	0.017
Organizational culture	0.312**	0.003

** Correlation is significant at 0.01

* Correlation is significant at 0.05

Source: By the researcher based on SPSS outputs.

Table 13: Analysis of variance of regression (ANOVA) between organizational culture and human resource development

Model	Sum squares	Degrees of freedom	Mean squares	(F) value	Significance level
Regression	3.373	1	3.373	9.039	0.003
Error	31.342	84	0.373	-	-
Sum	34.715	85	-	-	-

Source: By the researcher based on SPSS outputs.

Table 14: The 't' test on H₃

Model	Non-standard factors		Standard factors	t test values	Significance level
	A	Standard error	Bêta		
Constants	2.468	0.461	-	5.360	0.000
Organizational culture	0.385	0.128	0.312	3.007	0.003

Source: By the researcher based on SPSS outputs.

Testing Sub-Hypothesis H₄

The fourth and last sub-hypothesis that assumes: '*H₄: Organizational culture enables to maintain continuous improvement*' will be tested through correlation coefficient between organizational culture and continuous improvement and the analysis of variance of regression (ANOVA), then the 't' test will be set to either accept or refuse H₄. Table 15 shows Pearson correlation coefficient between organizational culture and continuous improvement.

Table 15 shows that the overall correlation coefficient between organizational culture and continuous improvement is 0.464. This correlation is weak but positive and significant at 0.000. The table also shows that organizational behavior is the only dimension that had no significant correlation with continuous improvement.

In addition, table 16 shows the analysis of variance of regression (ANOVA) between

organizational culture and continuous improvement.

Table 16 shows that the (F) value is 23.039 at 0.000 significance level, this level is less than 0.05, which refers to a significant linear effect of organizational culture on continuous improvement.

The results of Pearson correlation coefficient and analysis of variance of regression (ANOVA) allow to make the 't' test on H₄, that is shown in table (17) where:

- ✓ *H_{4.0}: Organizational culture does not enable to maintain continuous improvement;*
- ✓ *H_{4.1}: Organizational culture enables to maintain continuous improvement.*

Table 17 shows that the 't' value equals to 4.800 at 0.000 significance level, this level is less than 0.05 which refuses the Null hypothesis H_{4.0} and confirms the alternative hypothesis H_{4.1}. So, '*Organizational culture enables to maintain continuous improvement*'.

Table 15: Pearson correlation coefficient between organizational culture and continuous improvement

Variable and dimensions	correlation coefficient	Significance level
Organizational values	0.395**	0.000
Organizational behavior	0.101	0.356
Artifacts	0.538**	0.000
Organizational culture	0.464**	0.000

** Correlation is significant at 0.01

Source: By the researcher based on SPSS outputs.

Table 16: Analysis of variance of regression (ANOVA) between organizational culture and continuous improvement

Model	Sum squares	Degrees of freedom	Mean squares	(F) value	Significance level
Regression	11.361	1	11.361	23.039	0.000
Error	41.421	84	0.493	-	-
Sum	52.782	85	-	-	-

Source: By the researcher based on SPSS outputs.

Table 17: The 't' test on H₄

Model	Non-standard factors		Standard factors	t test values	Significance level
	A	Standard error	Bêta		
Constants	0.791	0.529	-	1.494	0.139
Organizational culture	0.706	0.147	0.464	4.800	0.000

Source: By the researcher based on SPSS outputs.

Findings Discussion

The revealed findings and tested sub-hypotheses are discussed in order to know in more details how organizational culture can contribute in each of TQM dimensions.

Discussing Sub-Hypothesis 'H₁'

Validity of sub-hypothesis 'H₁' was confirmed, so '*organizational culture makes top management leadership committed to TQM*', and all of organizational culture's dimensions had a positive significant effect on top management leadership commitment.

Artifacts had the highest correlation and effect on top management leadership commitment in order to adopt TQM in the salt complex. That means that the top management leadership in this organization is aware about the importance of quality plans and programs as well as setting norms and standards to maintain and sustain quality in every output related to the complex. So, quality planning is one of the most 'administrative requirements' that top management leadership need to apply TQM in the organization.

Kanji (1995) also argues the vital role of top management leadership is to set quality plans and fulfill them after determining quality goals and quality policies. That can be achieved through precisely defining the actual position of the organization towards TQM and the desired future one, then explaining how to move from the first to the other position as well as providing with necessary tools to carry out all of that.

Organizational values also had a correlation with and an effect on top management leadership commitment in order to adopt TQM in the salt complex. Leaders affirm that 'everybody is involved in quality'. They do their best to ensure quality values in the salt complex. Woods (1996) supports the organization to adopt this type of values, so 'everybody is involved in quality' means that applying TQM depends on how employees are ready to adopt quality values.

In addition, the complex allows values of 'focus on operations' so that employees should always focus on their roles. Woods (1996) argues that 'focus on operations values' leads to work perfection so quality of internal operations can be ensured and continuous improvement can be enhanced.

Organizational behavior had the weakest -but positive- correlation with and an effect on top management leadership commitment in order to adopt TQM in the salt complex. In general, there was an ethical leadership style in the complex, this type of leadership has an important role in adopting TQM (Svensson and Wood, 2005). There was a spiritual leadership style, leaders practice what Fry (2003) names it 'calling'; they work on preparing employees mentally to carry out their duties with high quality, maintain organizational commitment and contribute in continuous improvement.

Discussing Sub-Hypothesis 'H₂'

Validity of sub-hypothesis 'H₂' was confirmed, so '*organizational culture can raise the focus on the customer*', and all of organizational culture's dimensions had a positive significant effect on focus on the customer.

Artifacts had the highest correlation and effect on focus on the customer. The complex has clear plans and programs about customers such as customer relationship management 'CRM'. Su et al. (2010) affirm that CRM is a part of TQM and CRM's contents consist with TQM's ones.

Moreover, the complex provides with necessary technology to keep in touch with the customers like the phone and email. Top management also arranges direct meetings with customers in order to know their demands, complaints, opinions and suggestions about products and services.

Organizational behavior had a role in the focus on the customer, employees in the complex have the so called 'organizational citizenship behavior' (Rafaeli et al., 2008); they show readiness to make extra efforts to maintain desired quality, help their coworkers to fulfill their duties and strive to get the information about customers to understand quality from their view.

Organizational values had also a role in the focus on the customer through social responsibility. Ghobadian et al. (2007) argue that social responsibility and TQM share some ethical ingredients and social responsibility means being aware about stakeholders, especially customers. Tarí (2011) also says that

social responsibility means to be committed towards quality, it includes employees' integrity to provide with a quality product, and this is necessary for TQM.

Discussing Sub-Hypothesis 'H.3'

Validity of sub-hypothesis 'H.3' was also confirmed, so '*organizational culture contributes in human resource development towards TQM*'. Organizational behavior had a role in developing human resource towards TQM through teamwork. Results showed that employees in the complex tend to get their duties done with cooperation and esprit-de-corps. That is good for communications, Just-In-Time deliveries and internal climate, so it is good for TQM.

Smit (2012) argues that the teamwork is vital for an organizational culture that support TQM. Coyle-Shapiro (1996) also confirms that teamwork is one of the intangible components of TQM, so 'without teamwork, TQM will end before it get started' (Coyle-Shapiro, 1996).

Artifacts had a role in human resource development towards TQM. The complex organizes training programs and courses for employees to develop and maintain their competencies. Manley (1998) says that employees will do their best to enhance quality if the organization provided them with appropriate training and tools.

In the other side, the study did not find a significant relationship between organizational values and human resource development in order to adopt TQM at the salt complex. Although employees confirm that organizational behavior is necessary, but they think that the complex does not work on collectivism values and socialization as vital for TQM.

Discussing Sub-Hypothesis 'H.4'

Validity of sub-hypothesis 'H.4' was also confirmed, so '*organizational culture enables to maintain continuous improvement*'. Notably, Artifacts have a presence in the complex in terms of Deming 'PDCA' cycle for continuous improvement, Ishikawa cause-and-effect diagram and the five 'S'. In addition, top management arranges meetings frequently for 'Management Revue' to control quality programs, tools and procedures to ensure

continuous improvement in quality of everything.

That goes with what Deming says about product improvement; the organization must set plans for continuous improvement through teams to identify what needs to be improved and how so (Tompkins, 2005).

Organizational values had also a role in continuous improvement, employees in the complex argue such values as mental readiness for improvement and considering problems as an opportunity for leaning and improvement. Mansir and Schacht (1989) confirm that problems are a real chance to enhance internal operations, and without problems, there is no need for continuous improvement.

In addition, employees experience a 'culture of fearlessness' in the complex; managers do not tend to use threatening and punishment with them, instead, honest communications exist. Deming (1986) confirms in principle no 8 (of his 14 principles of TQM) the importance of values of fearlessness to establish TQM.

As for organizational behavior, this study did not find a significant relationship between it and continuous improvement in order to adopt TQM at the salt complex. Although employees confirm collectivism values and teamwork, but they think that it is not enough as an organizational behavior to ensure continuous improvement in the salt complex.

CONCLUSION

This study aimed to explore how organizational culture can contribute in adopting Total Quality Management (TQM) in the organization, and a case study was conducted at the salt complex, El Outaya, Biskra State. Several findings were extracted:

- ✓ Organizational culture sands for the identity of the organization, it translates the vision into action, and express the organization's relationships with the stakeholders;
- ✓ There are so many models to describe organizational culture, they identify the varied aspects of organizational culture to interpret other aspects of the organization, such as vision, leadership styles and policies, etc.;
- ✓ The dimensions used to express organizational culture in this study are the

- most expressive and comprehensive. Organizational values represent the intangible intellectual aspect, they explain the prevailing thinking models in the organization;
- ✓ Organizational behavior is considered as the interpretation of organizational values. Employees act in accordance with the value system imposed by the organization or those they deem them appropriate to work conditions;
 - ✓ Artifacts involve the application of the intellectual aspect of the organizational culture on the ground, and are represented in the various plans, programs and methods of management applied by the organization to suit the culture it deems appropriate;
 - ✓ As for TQM, it is an integrated management philosophy aimed at making the quality of products and any activity within the organization a routine;
 - ✓ Top management leadership commitment is critical to TQM success, they set quality management plans, provide with necessary resources and ensure TQM implementation with the participation of all employees of the organization;
 - ✓ The focus on the customer is the most important objectives of TQM, the process of planning for quality, production and feedback are all built on the customer's perspective of quality;
 - ✓ The human resource is a fundamental pillar in TQM and the organization as a whole. This strategic resource must be developed in line with the organization's orientation towards TQM, such as providing with the appropriate training, organizational empowerment, freedom of communication and spreading the culture of fearlessness in the internal environment;
 - ✓ Continuous improvement is also important in TQM, it represents initiatives that enable sustainability in adopting TQM as an organizational lifestyle.

Moreover, this study tested the main hypothesis and its four sub-hypotheses and answered its questions, so:

1. Organizational culture makes top management leadership committed to TQM (H.₁) through consolidating quality values, using

appropriate leadership styles, setting quality plans and programs;

2. Organizational culture can raise the focus on the customer (H.₂) through integrity values, social responsibility, organizational citizenship and commitment;

3. Organizational culture contributes in human resource development towards TQM (H.₃) with the use of training programs, open communications and teamwork;

4. Organizational culture enables to maintain continuous improvement (H.₄) through considering problems as chances for improvement, a fearlessness culture, recognition and appreciation and encouraging innovation.

So, all of that confirm the main hypothesis: *'Organizational culture contributes in adopting TQM in the organization through: organizational values, organizational behavior and artifacts'*.

Future Research

Besides the significant extracted findings, this study found some questionable results that can be purposes for future research. First: there was no significant relationship between organizational behavior and continuous improvement in order to adopt TQM at the salt complex. Although employees admit that organizational behavior is necessary, they believe that the complex does not stress on collectivism values and socialization as inevitable for TQM. Second: there was no significant relationship between organizational values and human resource development in order to adopt TQM at the salt complex, even though employees admit necessity of organizational behavior, which is the translation of values.

Therefore, I recommend further specific researches to explore how organizational behavior contributes in continuous improvement in order to adopt TQM, and how organizational values affect human resource development towards TQM.

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