

Organizational culture impact on knowledge exchange: Saudi Telecom context

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Abstract

Purpose – The purpose of this study is to investigate the impact of some organizational culture attributes, including: openness to change, innovation, trust, teamwork, morale, information flow, employees' involvement, supervision, customer service and reward orientation on the knowledge exchange (KE) process within the context of the Saudi Telecom Company (STC) as a representation of the Saudi context.

Design/methodology/approach – A descriptive correlation design was used. A web survey was used to collect data from 378 employees working on STC using Random Number Generator 0.2 software. The sample was selected using an e-mailing list.

Findings – The findings revealed that the cultural attributes of trust, innovation, information flow, supervision, and reward have an impact on KE within the context of the STC. Additionally, the study revealed a statistically significant correlation between organizational culture and KE as a whole (0.75), which emphasizes the effective role of organizational culture factors on exchanging knowledge within the context of the study.

Research limitations/implications – This study presents only preliminary results from limited data. Additional quantitative data are needed to employ more superior statistical analysis. Moreover, the current study is exploratory in nature with a relatively small number of respondents from the STC.

Originality/value – The originality of this study is derived from the importance of KM as a strategic organizational tool as well as the importance of culture as an influential factor. The STC, one of the biggest companies in the Middle East, is trying to implement aspects of KM. Towards this end, the company has created a new division of KM which is suffering from a lack of research studies that explore issues relating to KM in Arab countries in general and the Saudi context in particular, which makes the topic of this research not only unique but also of high practical significance.

Keywords Knowledge management, Information exchange, Organizational culture, Saudi Arabia

Paper type Research paper

1. Introduction

Knowledge management (KM) focuses on connecting people, processes and technology for the purpose of leveraging corporate knowledge (Buckman, 2004). To make the knowledge valuable for an organization, it has to be exchanged, distributed and shared among members of an organization (Supar *et al.*, 2005). Knowledge exchange (KE) is the core of KM as noted by many researchers (Leidner and Alavi, 2006; Davenport and Prusak, 2000; Zack, 1999; Senge, 1990). Recently, there is an increasing emphasis on studying the factors that might affect KE in public and private sectors (Zhang *et al.*, 2006; Leidner and Alavi, 2006).

Many studies that explored KM issues proposed that corporate culture can play a key role in supporting or hindering successful application of knowledge sharing and exchanging (Rhodes *et al.*, 2008; Zhang *et al.*, 2006; Leidner and Alavi, 2006; Kim and Lee, 2006; Chong and Choi, 2005; Akamavi and Kimble, 2005; Lucas, 2005; Park *et al.*, 2004; Wang and Rubenstein-Montano, 2003; Ladd and Ward, 2002; Faraj and Wasko, 2001).

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Since the areas of KM and KE are relatively new area of research within the context of Arab countries in general and Saudi context in particular, and based on the findings of the previous studies in developed countries, this research explored some cultural factors and their impact on KE as a key KM process. These cultural factors include: openness to change, innovation, teamwork, morale, information flow, employee's involvement, supervision, customer service, trust and reward orientation. The research was conducted within the context of STC, which represents a unique yet rich culture where the scarcity of research concerning KM is a major concern.

1.1 Statement of the problem

There is an agreement among many researchers that the business is now is in the era of knowledge economy which is characterized by the growing importance of intellectual capital and KM. Among the important processes of KM is KE, which can be seen as the translation or transferring of knowledge among people within a certain context as a part of their interaction. Despite the growing number of studies relating to KE in developed countries, few studies have explored this issue within the context of Arab world in general and Saudi Arabia context in particular.

Accordingly, this research attempts to investigate the impact of some organizational culture attributes on KE process within the context of STC. This enables understanding of the appropriateness STC's culture for KE. The uniqueness of Saudi culture where collectivistic attributes are emphasized (Hofstede, 1991) is of great importance for the application of KM processes, which might provide an opportunity to develop a necessary and demanding knowledge-based organization.

To reach this end, this research seeks to answer the following questions:

1. What is the impact of organizational culture factors on KE within the context of STC?
2. Does the STC culture support or hinder KE?

1.2 The importance of the research

Most of the available literature relating to KM has considered organizational knowledge as a significant organizational asset that contributes to the success and survival of the organization in highly competitive business environment. Accordingly, investigation of some aspects of KM (including KE) is seen as important as the knowledge itself.

Nevertheless, a number of organizational factors may support or hinder the role of organizational knowledge. Among these factors is the organizational culture, which is defined as the basic pattern of shared assumptions, values, and beliefs considered to be the correct way of thinking about and acting on problems and opportunities facing the organization (McShane and Von Glinow, 2003).

Accordingly, the importance of this research is generated from the importance of KM as a strategic organizational tool as well as the importance of culture as an influential factor. STC, one of the biggest companies in the Middle East, is trying to implement aspect of KM. Towards this end, the company has created a new division of KM which is suffering the lack of research studies that explore issues relating to KM in Arab countries in general and Saudi context in particular which makes the topic of this research not only unique but also of high practical importance.

“ Among the important processes of KM is knowledge exchange, which can be seen as the translation or transferring of knowledge among people within a certain context as a part of their interaction.”



1.3 Aim and objectives of the research

This research aimed at finding out if the culture of STC can hinder or support the KE application. To achieve this aim, the following objectives were proposed:

- Exploration of the cultural attributes of STC.
- Examination of the impact of cultural attributes on KE within the context of STC.
- Providing theoretical and empirical recommendations to decision makers relating to the best approaches to support the application of KM not only within the context of STC, but also with similar contexts.

2. Theoretical background

2.1 Organizational culture

Organizational culture is an important issue in both academic research and management practice because it is the most important factor that can make the organization succeed or fail (Schein, 2004; McShane and Von Glinow, 2003). Culture might be one of the strongest and most stable strength within the organizational context (Schein, 2004). Hofstede (1991) noted in his writing that it is important to recognize that national culture and organizational culture are different in nature. His research indicates that national culture mostly stems from consistency in values, while organizational culture stems mostly from consistency in practices.

Organizational culture is defined as the basic pattern of shared assumptions, values, and beliefs that are considered as the correct way of thinking about and acting on problems and opportunities facing the organization (McShane and Von Glinow, 2003).

The most widely used definition of organizational culture is provided by Schein (2004, p. 17) who revealed that organizational culture can be seen as:

A pattern of shared basic assumptions that the group learned as it solved its problems of external adaptation and internal integration that 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.

This definition gives a reason why the culture is important in the success of the operations and activities of the organization.

According to Schein (2004), organizational culture is the most critical factor controlling an organization's capacity, effectiveness, survival and success. Saudi Arabia is almost identical to other Arab countries. Their Muslim faith plays a large role in the people's lives (Hofstede, 1991). Large power distance and uncertainty avoidance are the predominant characteristics for this region. This means that it is expected and accepted that leaders separate themselves from the group and issue complete and specific directives. However, other cultural attributes including the accumulative nature of Saudi culture may promote exchanging of knowledge among members of the society.

2.2 Knowledge management

According to *Webster's Dictionary*, knowledge is "the fact or condition of knowing something with familiarity gained through experience or association". In practice, though, there are many possible, equally plausible definitions of knowledge. A frequently used definition of knowledge is "a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information" (Davenport and Prusak, 2000, p. 5).

According to Davenport and Prusak (2000), knowledge is originated and applied in the minds of knowers. In organizations, it often becomes embedded not only in documents or repositories, but also in organizational routines, process, practices, and norms (Davenport and Prusak, 2000). Knowledge, then, is intrinsically linked to human thought and experience. There are two kinds of knowledge, tacit and explicit knowledge (Nonaka, 2007).



Tacit knowledge is personal, context-specific and hard to formalize and communicate. It includes skills, experiences, insight, intuition and judgment (Tiwana, 2000). Explicit knowledge can be easily collected, organized and transferred through digital means. Examples might include a telephone directory, an instruction manual, or a report of research findings (Tiwana, 2000).

Effective KM makes sure that the right information reaches the right people at the right time (Davenport, 2006). Wiig (2004) divided KM processes into creation, manifestation, use, and transfer. Creation and manifestation are related to how knowledge is created and manifested in people's minds as well as in procedures, culture and even technology. Use is concerned with how it is used in making decisions and other knowledge-related work by individuals and businesses. Transfer is related to how we learn and how we otherwise can capture and exchange knowledge.

2.2.1 Knowledge exchange. Exchanging knowledge for re-use by other members within the organization- as a core idea behind KM- has been discussed in the literature of organizational learning (Garvin, 1993; Senge, 1990), innovation (Yoo and Ginzberg, 2003; Leonard and Straus, 1997), management of technology (Forzi and Peters, 2005), and strategic management (Hansen *et al.*, 1999). One dimension of the current interest in KM is the extent to which information technology is being used to exchange the knowledge.

Many researchers (Wiig, 2004; Hall, 2001; Davenport and Prusak, 2000; Nonaka and Takeuchi, 1995) use terms such as; knowledge exchange, knowledge transfer, knowledge translation, knowledge mobilization, knowledge sharing, and knowledge utilization interchangeably to describe the transmitting of the knowledge from one person or group to another. This research sticks to the concept of KE as a core process that is necessary for KM implementation, which has to be an active process to create linkage and exchange between the organizational members.

Although effective KE practices are important to all industries and organizations, building a KE mechanism with the technology only does nothing to motivate employees to take part with their valuable and sustenance critical knowledge assets (Tiwana, 2000). The feasible solution lies in an amicable synthesis of people with technology, and cultural change with technological change. Malone (2003) suggests that successful KE depends on the context in which the knowledge is exchanged, characteristics of the knowledge or evidence, and the way KE is facilitated. For this reason, KE strategies are more effective when they are aligned with the culture and values of communities.

2.3 Cultural factors and knowledge exchange

Many researchers (Rhodes *et al.*, 2008; Zhang *et al.*, 2006; Leidner and Alavi, 2006; Kim and Lee, 2006; Chong and Choi, 2005; Akamavi and Kimble, 2005; Lucas, 2005; Park *et al.*, 2004; Wang and Rubenstein-Montano, 2003; Ladd and Ward, 2002; Faraj and Wasko, 2001) study the organizational factors that influence KM and KE. Each of these studies has a view concerning these factors depending on the culture perspective. A summary of the most recent studies is listed in Table I.

In the light of the above literature and previous studies, the next section provides an outline of the proposed research model and variables in addition to the conceptual definition of research variables.

3. Research model

The purpose of this study is to explore the impact of some cultural factors on KE within the context of STC. A descriptive and correlation design is used to determine if organizational culture factors: openness to change, innovation, trust, teamwork, morale, information flow, employee's involvement, supervision, customer service and reward orientation (independent variables) can affect KE (dependent variable). Figure 1 shows the model of the research.



Table 1 Summary of previous studies

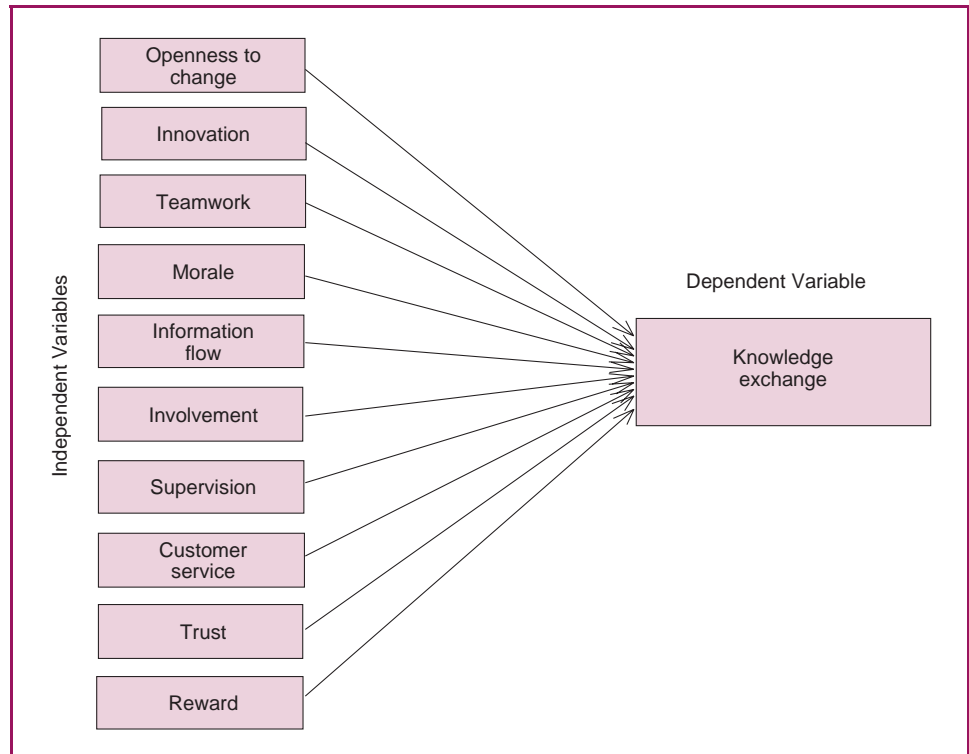
Author	Proposal	Type	Finding
Rhodes <i>et al.</i> (2008)	Aims to discuss factors that influence knowledge transfer	A survey study, conducted amongst 1,086 high-tech companies	IT systems, structured learning strategies, innovative organizational culture, and flexible structure and design
Jamali and Sidani (2008)	Assess the performance of a sample of Lebanese organizations of the core learning organization dimensions identified in the literature	The questionnaire was compiled, comprising 40 questions consolidated from the published literature, addressing seven key learning organization dimensions	Employee participation, learning climate, systematic employee development, constant experimentation, and learning reward systems
Gammelgaard (2007)	Aims to answer the question: Do incentives encourage knowledge sharing?	A questionnaire survey producing data from 1,535 respondents from nine different organizations localized in four different countries	Reward
Murat Gumus (2007)	Attempted to investigate the effects of communication on knowledge sharing in an organization	A questionnaire form designed and conducted to collect data from 167 Academic and Administrative in Canakkale Onsekiz Mart University (COMU), Turkey	Knowledge sharing is strongly related with communication satisfaction and communication style
Zhang <i>et al.</i> (2006)	How organizational and technological factors interact with the nature of knowledge to influence the knowledge-sharing process	A case study approach	Distributed leadership, alignment of issues, incentives, coordination of a number and variety of groups, trust, technology, and implementation
Kim and Lee (2006)	Analyzes the impact of organizational context and IT on employees' perceptions of knowledge-sharing capabilities in five public sector and five private sector organizations in South Korea	Survey questionnaires were sent to employees in agencies in South Korea	Social networks, centralization, performance-based reward systems, employee usage of IT applications, and user-friendly IT systems were found to significantly
Chong and Choi (2005)	To identify the best practices that would make knowledge management program work in an organization	Review of various knowledge management models presented by various researchers and practitioners	Employee training, employee involvement, teamwork, employee empowerment, top management leadership and commitment, organizational constraints, information system infrastructure, performance measurement, egalitarian culture, benchmarking, and knowledge
Obaisat (2005)	Examines the impact of organizational culture on knowledge creation in Free Zones Corporation, Jordan	Data collected from 40 respondents in Free Zones Corporation, Jordan	Trust, mass culture, visions, Language and shared stories, management practices and cultural norms are critical to knowledge creation

3.1 Variables definition

- *Openness to change.* A cultural attribute which means thinking outside the box'' (Stankosky, 2005), recognizing and responding to the need for change, and using it to improve the performance or having a high absorptive capacity'' (Davenport and Prusak, 1998).
- *Innovation.* Innovation is seen as providing an environment with the physical and procedural methods of generating and introducing challenging ideas (Stankosky, 2005). Innovation is the ability to construct often radically new solutions or products, which is often viewed as one of the competitive advantages of the organization.
- *Teamworking.* Teamworking is the extent to which employees perceive their work group operating as a team, where trust is high and people are treated in a fair and consistent manner (Glaser & Associated Inc., 2008). It is an important cultural factor that fosters human-to-human contact and members are willing to learn from each other, which is expected to have an impact on KE (Sheng *et al.*, 2004; Schein, 2004).



Figure 1 The proposed model of the research



- **Morale.** This cultural attribute taps the extent to which employees feel motivated to be efficient and productive, and to give their best effort. It also discovers the extent to which employees feel respected by people in their work group as well as the rest of the organization (Glaser & Associated Inc., 2008). This cultural attribute reflects a concern for people (Schein, 2004; Senge, 1990).
- **Information flow.** Means whether employees get enough information to be efficient and productive, if they know why changes are made, and what is happening in other departments outside their own department (Glaser & Associated Inc., 2008). Schein (2004) argues that learning cultures assume that full and open communication is essential and effective information flow helps exchanging the knowledge (Sheng *et al.*, 2004).
- **Involvement.** Employee's involvement means whether employees feel they have a say in decisions that affect their work, and if they perceive that their ideas are requested and valued. It also reveals whether employees feel that their input counts and is acted on (Glaser & Associated Inc., 2008).
- **Supervision.** Supervision is defined as the extent to which job requirements are made clear by the supervisor. It also investigates the supervisor's ability to accept criticism, listen, delegate responsibility, and acknowledge when a job is well done (Glaser & Associated Inc., 2008). Some supervision structures limit KE activities and communication between employees or between employees and supervisors (Kim and Lee, 2006).
- **Customer orientation.** This explores the extent to which employees perceive their group working to continuously improve service to external customers. It also discovers if coworkers are treating one another as valued customers (Glaser & Associated Inc., 2008). Customer orientation can help organizations to focus on what they are producing and how they produce it to enhance value for both the organization as well as their customers.

- *Trust*. Trust represents the climate in which people trust each other. It also involves employee faith in corporate goal attainment and organizational leaders, and their belief that organizational action will prove beneficial for employees (Rivière, 2001). Some researchers see atmosphere of trust as the cornerstone of knowledge-sharing cultures (Stankosky, 2005; Figallo, 2002; Cohen and Prusak, 2001).
- *Reward orientation*. Reward orientation is the degree to which reward allocations are based on employee performance in contrast to seniority or favoritism (Van de Post and De Coning, 1997). In fact, KE is often the subject of organizational reward structures. Organizations must reward knowledge sharing and team cooperation more than individual achievements (Davenport and Prusak, 2000).
- *Knowledge exchange*. The push and pull found in the multiple directional movements of data, information, and knowledge between individuals and groups for mutual benefit (Levesque *et al.*, 2007).

To test the proposed model, the following hypotheses were proposed:

Ho1. There is no statistically significant impact for organizational culture factors on the knowledge exchange within the context of STC.

To test this main hypothesis, ten sub-hypotheses were proposed. The research proposes ten cultural factors that are expected to have an impact on KE as follows:

Ho1.1. There is no statistically significant impact for openness to change on the KE within the context of STC.

Ho1.2. There is no statistically significant impact for innovation on the KE within the context of STC.

Ho1.3. There is no statistically significant impact for teamwork on the KE within the context of STC.

Ho1.4. There is no statistically significant impact for morale on the KE within the context of STC.

Ho1.5. There is no statistically significant impact for information flow on the KE within the context of STC.

Ho1.6. There is no statistically significant impact for involvement on the KE within the context of STC.

Ho1.7. There is no statistically significant impact for supervision on the KE within the context of STC.

Ho1.8. There is no statistically significant impact for customer orientation on the KE within the context of STC.

Ho1.9. There is no statistically significant impact for trust on the KE within the context of STC.

Ho1.10. There is no statistically significant impact for reward orientation on the KE within the context of STC.

4. Design and methodology

A descriptive correlation design was used to determine if the proposed organizational culture factors could affect KE. This research can be described as a deductive research where previous studies were used to provide a guideline to achieve the research objectives. It starts from theories and current literature to explain and analyze the reality.

4.1 Population and sampling

The sample of this research was obtained from a population of STC employees. STC was established on May 2, 1998 to take over the telecommunications operations of the Kingdom of Saudi Arabia, previously managed by the Ministry of Post, Telephone and Telegraph.



STC is the largest service provider operating in both mobile and fixed line businesses in Saudi Arabia. STC is the largest telecommunications company in the Middle East. The government-controlled company (formerly the sole telecommunications operator in the kingdom) primarily provides a range of telecommunications services, which include mobile (2G and 3G), fixed local, national, and international telephone services; telex; and telegraph and data services, such as data transmission, leased lines, internet services, and e-commerce. It also primarily provides call divert, call waiting, caller identification, fixed numbers, conference call, bill reminder, credit reminder, voice mail, and DSL Sky Internet services. The company's headquarters are located at King Abdul-Aziz Telecom Complex in Riyadh and its 21,000 employees operate from 13 major district offices and numerous customer service locations throughout the Kingdom. There is a KM division on STC and has three branches: KM Branch, Research and Consultation Branch and Policies and Procedures Branch. The division provides knowledge services to all STC staff.

The researchers selected this company to test the model of the study because STC is the largest telecommunications company in the Middle East and is seen as a knowledge-based company as stressed in the company's site. Moreover, and due to the multinational distribution of its labor as well as its market and clients, STC is seen as a representation of the Arab cultural setting

A simple random approach was used which involves collecting data from members of the population who were selected using Random Number Generator 0.2 software. The sample was selected using e-mailing list. The sample size of 400 employees was determined as an appropriate using sample calculator which is available online on www.surveysystem.com/sscalc.htm. After determining the sample size, a list of 1,000 employees' ID numbers was generated using "Random Number Generator 0.2" software, and then a survey e-mail invitation was sent to those employees. A total of 1,000 e-mails were sent, 462 of them submitted the web survey. In total 378 were completed and determined as suitable for analysis.

Data were collected through online questionnaire posted on the STC intranet, which is accessible by every employee in STC. This online survey was developed with the programming language Delphi 2007. The data collected were recorded directly into a Microsoft Access database. The online version was made as user friendly as possible. The procedure of survey composed of four steps: The link of the survey sent to the sample of STC employees using internal e-mail, they all can reach the site; they submit the survey, then data recorded directly to Microsoft Access database.

5. Data analysis

5.1 Sample characteristics

Table II shows the characteristics of the sample according to demographic variables.

5.2 Descriptive statistics

Means and standard deviations for the independent variables were calculated. This initial analysis enabled exploration of the existence and importance of every variable within the context of STC. The means were rated as follows:

- *Low* – 1-2.49;
- *Medium* – 2.5-3.49; and
- *High* – equal to or more than 3.5.

“Results of the study showed that some organizational culture factors (teamwork and customer orientation) have high level of importance from the perspectives of STC's employees.”

Table II Sample characteristics

<i>Level</i>	<i>Frequency</i>	<i>Percent</i>
<i>Age</i>		
20-30	51	13.5
31-40	221	58.5
41-50	102	27
More than 50	4	1.1
<i>Experience (years)</i>		
Less than 1	1	0.3
1-5	23	6.1
6-10	118	31.2
11-20	169	44.7
More than 20	67	17.7
<i>Position</i>		
Executive	3	0.8
Manager	18	4.8
Director	84	22.2
Supervisor	117	31
Officer	156	41.3
<i>Education</i>		
Below secondary	12	3.2
Secondary	49	13
Diploma	114	30.2
University	159	42.1
Postgraduate	44	11.6

If the mean value of the statements is more than or equal 3.5, then the level of agreement with the statements measuring a particular variable is high. If the mean value of the statements ranges between 2.5 and 3.49, then the level of agreement with the statements is medium. If the mean value of the statements is equal or less than 2.49, then the level of agreement with the statements is low (see Table III).

Table III shows that the employees of STC believe that the teamwork culture is high with mean value (3.7488) followed by the customer orientation with mean value (3.5361), supervision (3.4945), openness to change (3.4383), innovation (2.9578), involvement (2.9274), morale (2.8117), trust (2.7083), information flow (2.6835), and finally reward with mean value (2.2162).

5.3 Significance of the model

Pearson correlation coefficients were calculated to detect the existence of the relationship between the organizational culture factors and KE (see Table IV).

Table III Descriptive statistics (independent variables sorted descending means)

<i>Independent variables</i>	<i>Mean</i>	<i>SD</i>	<i>Level</i>
Team work	3.7488	0.64970	High
Customer orientation	3.5361	0.74064	High
Supervision	3.4945	0.80291	High
Openness to change	3.4383	0.80717	Medium
Innovation	2.9578	0.80187	Medium
Involvement	2.9274	0.81594	Medium
Morale	2.8117	0.90960	Medium
Trust	2.7083	0.84458	Medium
Information flow	2.6835	0.83851	Medium
Reward orientation	2.2162	0.96463	Low



Table IV Pearson correlation coefficient

<i>Independent variables</i>	<i>Correlation with KE</i>
Openness to change	0.477*
Innovation	0.628*
Teamwork	0.427*
Morale	0.626*
Information flow	0.638*
Involvement	0.609*
Supervision	0.467*
Customer orientation	0.496*
Trust	0.726*
Reward	0.662*
Total (culture)	0.752*

Note: *Correlation is significant at the 0.05 level

All correlation relationships between the independent variables (organizational culture factors), and (KE) as the dependent variable are significant and positive. The total value of the correlation relationship between the (organizational culture) and (KE) as whole is (0.75), which is a positive value that stresses the effective role of organizational culture factors on the exchange of knowledge within the context of STC. The strongest relationship was found between the independent variable (KE) and the dimension of the (trust).

5.4 Regression analysis

Regression analysis was used to test the hypothesis of the study. However, to meet the assumptions of regression analysis, some statistical tests were conducted including tolerance, Variance Inflation Factor (VIF), and skewness tests. The values of these tests were found to meet the assumptions of regression analysis (For a brief description of the three tests, refer to the Appendix, Table AI.)

To insure the validity of the model to test the main hypothesis of the study, Table V shows the results of regression analysis.

Table V shows that the overall regression model is significant ($F = 59.070$, $\alpha < 0.000$). R^2 (0.617) suggest that the independent variable (organizational culture factors) interpreted (62 percent) of the variation in the dependent variable (KE). Since the main aim of this study is to explore the impact of the organizational culture factors on KE within the context of STC, multiple regression analysis was used, the results are shown in Table VI.

It is clear from the statistical findings shown in Table VI, and the follow-up transactions (β), and (t) test that the independent variables (trust, reward, information flow, supervision and innovation) have significant statistical impact on the dependent variable KE. Results also showed that there is no statistically significant impact for variables (openness to change, teamwork, involvement, customer orientation, and morale) on the dependent variable KE.

Stepwise regression analysis was used to determine the importance of each independent variable and its contribution to the mathematical model. Table VII shows the results of stepwise regression analysis.

Table V The results of the regression analysis

<i>Dependent variable</i>	R^2	<i>Sum of squares</i>	<i>df</i>	<i>Mean square</i>	<i>F</i>	<i>Sig.</i>
<i>Knowledge exchange</i>						
Regression	0.617	181.756	10	18.176	59.070	0.000*
Residual		112.924	367	0.308		
Total		294.680	377			

Note: *Statistically significant at the level of significance ($\alpha = 0.05$)

Table VI The results of multiple regression analysis

<i>Independent variables</i>	<i>B</i>	<i>Std error</i>	β	<i>t value</i>	<i>Sig.</i>
Openness to change	0.039	0.049	0.036	0.796	0.427
Innovation	0.122	0.063	0.110	1.938	0.050*
Teamwork	0.030	0.058	0.022	0.510	0.610
Morale	0.012	0.060	0.012	0.191	0.848
Information flow	0.137	0.055	0.130	2.491	0.013*
Involvement	-0.023	0.061	-0.021	-0.376	0.707
Supervision	0.097	0.046	0.088	2.095	0.037*
Customer orientation	-0.022	0.053	-0.018	-0.405	0.686
Trust	0.396	0.057	0.378	6.909	0.000*
Reward	0.189	0.048	0.206	3.909	0.000*

Note: *Statistically significant at the level of significance ($\alpha \geq 0.05$)

Table VII The results of "stepwise multiple regression"

<i>Order of the entry of independent elements in the equation to predict</i>	<i>The value of R^2, specifically cumulative factor</i>	<i>Calculated value of T</i>	<i>Level of significance of T</i>
Trust	0.527	20.461	0.000
Reward	0.585	7.271	0.000
Innovation	0.600	3.751	0.000
Information flow	0.609	2.911	0.004
Supervision	0.616	2.474	0.014

The data contained in the Table VII, revealed that the variable (trust) has been ranked first and explained 53 percent of the variation in the dependent variable, followed by variable (reward) which explained with (trust) 56 percent of the variation in the dependent variable, third was (innovation) which explained with (trust) and (reward) 60 percent of the variation in the dependent variable, fourth was (information flow) variable which explained with (trust) and (reward) and innovation) 61 percent of the variation in the dependent variable, at last (supervision) variable which can with the previous four variables explain 62 percent of the variation in the dependent variable. Nonetheless, the other variables (openness to change, morale, teamwork, involvement, and customer orientation) were out of the regression equation.

6. Interpretation of the findings

Results of the study showed that some organizational culture factors (teamwork and customer orientation) have high level of importance from the perspectives of STC's employees. Research participants believe that teamwork culture is very important with mean value (3.7488) followed by the customer orientation with mean value (3.5361). Supervision, openness to change, innovation, and involvement, morale, trust and information flow have medium level of importance from the perspectives of STC's employees. The order of these factors according to their means was: Supervision with mean value (3.4945), openness to change (3.4383), innovation (2.9578), involvement (2.9274), morale (2.8117), trust (2.7083), and information flow with mean value (2.6835). Reward has low level of importance from the perspective of STC's employees with mean value (2.2162).

The above results can be explained taking in our consideration the fact that although STC company has been privatized about ten years ago, it still has a public culture where the concept of team working and customer centric organizations have not been established. Accordingly, employees tend to support these organizational characteristics. In addition, the nature of Arab culture where STC employees' work enforces the need for team working and maximizes its importance from the employee's point of view.



Additionally, results of the study revealed a statistically significant correlation between organizational culture and KE as whole (0.75), which is a positive value stressing the effective role of organizational culture factors on exchanging of knowledge within the context of the study.

Many previous studies agree with this result and argue that the organizational culture is a very important factor that can influence KE (Basu and Sengupta, 2007; Malone, 2003; Al-Ali, 2003; De Long and Fahey, 2000; Tiwana, 2000; Davenport and Prusak, 2000). As stated by Robbins (2003, p. 10):

Often when people begin to plan KM, they think first of technology and hire technologists to design a system. Developing a knowledge-sharing culture is the key to success. Without a culture that incentivizes and rewards knowledge sharing, any investment in technology is doomed to disappoint.

As the main aim of this study was to find out if organizational culture factors have an impact on KE and to provide more insights concerning our proposed cultural factors and their impact on KE, each of our cultural factors is discussed as follows:

- *Openness to change.* This study revealed that there is no statistical significant impact for openness to change on KE within the context of STC, accordingly, *Ho1.1* was accepted. Although this result did not agree with some previous studies (Ladd and Ward, 2002), the result of the study should be viewed within the context of STC. This indication of resistance to change in this study could be explained through Hofstede's (1991) uncertainty avoidance dimension. His uncertainty avoidance index shows that Arab countries have strong uncertainty avoidance (score = 68). This, by definition, means that members of the Arab culture feel more threatened by uncertain or unknown situations. Accordingly, this indicates that the openness to change is not a clear cultural attribute in STC. Moreover, the study showed that 83 percent of the respondents were in the age of (31-50) which means that the majority of the respondents were old employees who inherited the old public organizational culture.
- *Innovation.* Innovation is an important aspect of learning organizational culture (Schein, 2004; Davenport and Prusak, 1998). Innovation in today's organizations is generated from knowledge workers and knowledge work processes (Davenport *et al.*, 1996). According to Singh and Kant (2008), if employees are not ready to take the responsibility of unassigned jobs, it is difficult to nurture the KE implementation in the organizations. The study revealed that there is statistical significant impact for innovation culture on KE within the context of STC. Accordingly, the study rejected *Ho1.2* and agreed with some previous studies (Rhodes *et al.*, 2008; Leidner and Alavi, 2006; Ladd and Ward, 2002).
- *Teamwork.* Organizations that successfully share key talent and knowledge across the organization would value team oriented work (Chong and Choi, 2005; Park *et al.*, 2004). However, the current study finding did not support that where the result showed that there was no statistical significant impact for teamwork as a dimension of organizational culture on KE within the context of STC. Accordingly, the study accepted *Ho1.3*. This might be due to the absence of teamwork culture in STC. In addition, the old system of government-controlled culture might lead to the absence of team culture. Another reason might be related to the management style where managers specify objectives and employees have to perform them individually.
- *Morale.* The study found that there was no statistical significant impact for morale as a dimension of organizational culture on KE within the context of STC. Accordingly, the study accepted *Ho1.4*. This might be due to the current instability that STC is going through at the time being. STC is currently trying to change its organizational structure, its strategy and its culture. The morale at this time might be low because the employees are not sure about their future. Choi and Hilton (2005) revealed that organizations need to maintain employees' morale during the difficult change periods, which is considered as an important issue the company, should take care of nowadays.
- *Information flow.* The study found that there is statistically significant impact for information flow as a dimension of organizational culture on KE within the context of STC.



Accordingly, the study rejected *Ho1.5*. This result agrees with some previous studies (Balthazard and Cooke, 2004; Sheng *et al.*, 2004). Schein (2004) found that learning cultures assume that full and open communication is essential and effective information flow helps exchanging the knowledge. Since information flow is supported largely by the social networks, one can explain this result based on the collectivistic characteristics of Arab culture (Hofstede, 1991). In addition, STC has a good IT infrastructure and communication technologies and computer networks, which enable exchanging of information easily using e-mail, intranet ... etc.

- *Involvement*. Involvement environment involves an environment where employees are rewarded for taking initiative and held accountable for their actions, but not punished for unpredictable outcomes (Fey and Denison, 2003). Researchers such as (Chong and Choi, 2005; Hall, 2001; Choi, 2000), found that employee involvement is one of the critical success factors for KM implementation.

However, this study revealed that there was no statistical significant impact for employee involvement as a dimension of organizational culture on KE within the context of STC. Accordingly, the study disagrees with the above previous studies and accepts *Ho1.6*. This might be due to: First, STC is still – after ten years from privatization – controlled by government organizational culture in which decisions are made only by top management and employee are not involved and might not be ready for effective involvement. Second, STC management is based on the management by objectives approach and employees seem not ready to take the responsibility of unassigned jobs, which makes it difficult to nurture the KM implementation in the organization (Singh and Kant, 2008).

- *Supervision*. The study revealed that supervision as a dimension of organizational culture had statistically significant impact on KE within the context of STC. Accordingly, *Ho1.7* was rejected. This result agrees with some previous studies (Zhang *et al.*, 2006; Norizah *et al.*, 2005, Sheng *et al.*, 2004).

KM in organizations also requires supervisors' commitment to create an environment within which people are able to share knowledge and are allowed to understand as well as practice the acquired knowledge. The supervisor's ability to accept criticism, listen, delegate responsibility, and acknowledge when a job is well done can enrich KE process (Glaser & Associated Inc., 2008). Nonetheless, some supervision structures limit KE activities and communication among employees or between employees and supervisors (Kim and Lee, 2006).

- *Customer orientation*. Firms are investing billions of dollars in technologies to manage customer information and turn it into knowledge (Davenport *et al.*, 2001). However, this study revealed that there was no statistically significant impact for customer orientation as a dimension of organizational culture on KE within the context of STC. This result supports *Ho1.8* so the hypothesis was accepted. This can be explained based on the fact that the culture of customer orientation is new for a large percentage of STC employees who are still dominated by governmental organization culture. The relatively small sample size used in this study can also explain this result where the sample might not include enough opinions from customer service department.
- *Trust*. Many previous studies in KM and KE areas argued that the trust culture was the strongest factor that impact knowledge sharing and exchanging (Norizah *et al.*, 2005; Obaisat, 2005; Lucas, 2005; Park *et al.*, 2004; Wang and Rubenstein-Montano, 2003; Sharratt and Usoro, 2003).

The findings of this study revealed that trust as a dimension of organizational culture had a statistically significant impact on KE within the context of STC. Accordingly, the study rejects *Ho1.9* and agrees with some previous studies (Rivière, 2001; Stankosky, 2005; Figallo, 2002; Cohen and Prusak, 2001).

- *Reward orientation*. One important factor of organizational culture is its system of rewards, which reflects the values of the organization, desired actions and inducements offered to its members for desired results (Schein, 1996). Unless knowledge sharing was encouraged, knowledge cannot flow easily across role or functional boundaries. It was



important, therefore, to create reward systems that maintained rewards in order to encourage employee behavior (Kim and Lee, 2006; Faraj and Wasko, 2001).

The findings of this study revealed that reward orientation as a dimension of organizational culture had a significant statistical impact on KE within the context of STC. This result support *H_{o1.10}* so the hypothesis was rejected. This emphasizes the importance of organizational reward for knowledge sharing and team cooperation more than individual achievements (Davenport and Prusak, 2000).

7. Research limitations

It is hoped that this research has contributed to the field of KM and KE in Arab environment in general and in Saudi environment in particular. The findings of this study are interesting, but they should be considered in the light of its inherent limitations. This study is limited by a number of factors. First, it presents only preliminary results from limited data. Additional quantitative data are needed to employ more superior statistical analysis. Second, at the time of study, STC (the context of the study) has been started some critical changes in the structure of company, its strategy and culture. These changes might lead to a situation that can be characterized by instability between employees. This situation may influence the results of the study.

Moreover, the current study is exploratory in nature with relatively small number of respondents from the STC. The study did not attempt to isolate the specific circumstances that may tend to influence the results in the framework of the organization studied (STC). Similarly, the findings of the study were based purely on the opinions of the employees. In addition, given the nature of this study, there is an opportunity to examine whether the relationship of the organizational culture and KE should be based on differentiation between different types of organizations.

However, one could argue that cultural similarities within the context of Arab world may largely exceed differences. Arabic countries share their cultural and social foundation, Islamic belief, language, and level of technological development. This expands the findings of this study to include the wider Arab countries context.

8. Conclusion and recommendations

Findings of this study can be helpful to the management of STC while they try to establish productive KM system. It outlines some important considerations and ideas not only to promote KE as a valuable organizational attribute, but also to understand the nature of STC culture and its appropriateness for successful KM initiative in general and fruitful KE in particular.

In its attempt to initiate KM, management of STC should clearly understand that KM theories that have been applied in other cultural settings might not be applicable for Saudi culture due to cultural differences that impose certain organizational characteristics. Therefore, managers have to accurately assess the culture of their organization. Some cultural changes should be introduced. According to this study, these changes might include encouraging of KE through the creation of a rewards-orientation culture, more effective information flow, promoting a trust environment, and encouraging innovation to create new knowledge. These cultural changes must begin with the senior management and must be an important part of the organizational values system.

“Managers have to accurately assess the culture of their organization.”



Moreover, organizations must take steps to facilitate the integration process between individuals and organizational interests. Employees also should be able to interact freely with each other, which can enrich their openness and support to change. Encouraging and facilitating the organizational communities of practice seems essential towards exchanging of knowledge.

In fact, it might be useful for managers to learn how to develop strategies for KM, which seeks to overcome the obstacles created by the culture, at least in the short term, rather than attempting to change cultures.

This study further opens the debate relating to the importance of culture and cultural characteristics and their impact on organizational strategies in general and on KM in particular. Considering the scarce of available studies relating to KM within the context of Arab countries, one could argue that the contribution of this study is of high value. However, while this study focused on the impact of organizational culture on the exchange of knowledge, it seems that the longer-term study examining the changes in organizational culture before and after the implementation of KM system will produce useful and interesting results.

Depending on the results of this study, this study can suggest some recommendations to the decision makers in STC and other similar contexts, these recommendations may include:

- Innovation, information flow, trust, supervision, and rewards system are important cultural attributes that should be considered for successful KM initiative. These factors can hinder or support exchanging of knowledge within the context of STC.
- The results of the study suggest that by promoting a culture that supports teamwork and information flow between workers, an organization can enhance the KE between its workers.
- For successful KM initiative, STC management has to promote a culture of involvement where employees are encouraged to make decisions that affect their jobs. Accordingly, benefits of any proposed KM initiative can be realized.
- The positive cultural attributes revealed in this study concerning STC should be directly linked to any proposed KM program.
- Effective reward system for employees can develop the knowledge sharing culture and achieve valuable KE.
- Knowledge sharing and exchanging has to be a domestic culture on STC by building this culture using deferent techniques like training, meeting, building communities of practices and so on.
- More research is essential to explore how cultural factors are likely to support or undermine more effective creation and sharing of knowledge around a particular activity or process. Future research should also explore the relationship between the dominant factors investigated in the study (including cultural attributes and knowledge exchange) and organizational performance. Moreover, and considering the extended and dynamic nature of cultural attributes, future research may explore some other cultural attributes.
- Considering the nature of the variables that were investigated in this study, future research might use some qualitative research methods (e.g. interviews and grounded theory). This can enrich and revalidate the findings revealed in this study.

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Appendix

Table A1 Multicollinearity, tolerance and skewness tests statistics

Independent variables	Tolerance	VIF	Skewness
Openness to change	0.520	1.924	-0.683
Innovation	0.322	3.103	-0.051
Teamwork	0.571	1.752	-0.371
Morale	0.272	3.670	0.039
Information flow	0.382	2.620	0.094
Involvement	0.332	3.010	-0.283
Supervision	0.591	1.692	-0.452
Customer orientation	0.526	1.901	-0.685
Trust	0.348	2.871	0.034
Reward	0.374	2.671	0.459

Note: The multicollinearity of the items within each section of the instrument was tested using the Variance Inflation Factor (VIF). A cut-off VIF score of 5.000 is used to reduce multicollinearity issues. It is revealed that the (VIF) value for all independent variables is less than 5, and ranging from 1.692-3.670, and allowed variation (Tolerance) for each variable of the study variables (Tolerance) ranged between 0.272-0.591, which are greater than 0.05. This indicates that there was no high link between independent variables. It is also confirmed that the data distribution follows the normal distribution, by calculating Skew factor (Skewness), with values less than 1



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