

The effect of culture on knowledge management in project-centered organizations

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Abstract: The aim of this study is to investigate the role of organizational culture on knowledge management in project-centered organizations in Iran. For this, in this study, organizational culture assessment implement (OCAI) in respective organization was used. Three variables were added to variables of the model in this study. These three variables are control culture, cooperation culture and generator culture. Survey for sharing behavior was done by two-way standard questionnaire and data were collected by Likert 5-point scale. A holding company and 33 subset of that were considered as sample. Based on obtained findings, organizational culture has positive effect on sharing tacit knowledge behavior. Market organizational culture and hierarchical organizational culture have negative effect on knowledge sharing behavior. Mixed organizational culture has positive effect on sharing tacit knowledge by consideration of dominant clan species while mixed organizational culture without considering dominant clan species has negative effect on sharing tacit knowledge. Generator and cooperation organizational culture both are affected sharing knowledge positively. But control organizational culture has negative effect on sharing knowledge.

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1. Introduction :

Organizations which increases daily are getting up to knowledge management as a key for increasing their competitive advantages (Bhatt, 2001). The reason of organization's interest to knowledge management is that knowledge causes to juice up performance and efficiency, increasing in quality and efficiency of their services and lead to creation of innovative solutions for their clients. In addition, knowledge management has an important role in organizational overall success (Lang, (2001), Nguyen (2009)). Previous studies had shown that organizational culture and strategic approaches are the main drawbacks in development and applying knowledge (Politis, 2001). Carrilo and et al. (2004) claimed that not only, beneficial knowledge management is depend on IT strategy but also it depends on social ecology of organization and in fact IT is a facilitator. Therefore, beneficial knowledge management needs to human advert and cultural aspects of business specially personnel's experiences and their tacit knowledge (Nonaka & Konno, 1998). Researchers studied the relation between strategic approaches and knowledge management (Sarin & Mcdermott, 2003) and also the relation between organizational culture and knowledge management (De Long & Fahey, 2000). Thus, strategic literature is pointed out that ability of understanding and work in cultural specific framework is prerequisite of strategic efficiency (Bass and Avolio, 1993).

Nonaka & Takeuchi (1995) declared that social interactions among organization's members have an crucial role in knowledge production and sharing.

Information and other technologies are using just as an activation tool. Generally, sharing knowledge means availability of knowledge for others in the organization (Abzari and Teimouri, 2008). Recent investigations had shown an interesting system of facilitate or barrier factors in sharing knowledge in organizations. Al-Alawi and et al.(2007) have declared that communications, information technology systems, remunerations and organization's structure have direct relation to sharing knowledge in organs. Among numerous aspect of facilitators of sharing knowledge, previous study is noted that organizational culture is the most significant aspect of facilitators(e.g Abzari and , Teimouri, 2008; Al-Alawi et al., 2007; Chin-Loy and Mujtaba, 2007; Roma'n-Vela' zquez, 2005).

2. Literature Review :

2-1- communities of practice

One of the factors of appearance of communities of practice in organizations is entered criticisms on traditional approach of personnel's training. In this approach, without consideration of real needs that individuals might face them during work, concept training in instruction classes' framework and learning by repetition had been emphasized (Orr, J.E.; 1990, Orr, J. E. 1996). This causes to researchers pay attention to create an approach in which individuals exchange knowledge and experiences and organizational issues in order to upgrade activities (Brown, J. S., & Duguid, P.; 2000).

Community of practice (COP) is a group of individuals (experts) which have common working

interest, working association and working issues. They share these factors and learn to how share them during regular interactions and finally how to work better (CoP Practitioner's Guide; 2001).

One the most important reasons that makes applying communities of practice needful is project-centered organizations. In project-centered organizations, the necessity of collection and sharing knowledge is felt because numerous projects with disposal and various obtaining experience and using knowledge, various spatial dimension, huge volume of valuable experience of project team and also project evanescent (Garrety, Robertson & Badham, 2005).

On the other hand, similarity of project nature and studying of failure factors and complications of it's repetition in other projects show the importance of sharing knowledge in organization. Nowadays, formation of communities of practice as an effective solution in sharing knowledge among the members of project-centered organizations is mentioned (Ruuska & Vartiainen, 2005). The importance point is that implementation of communities face to great complexity and challenges. This issue is exist in project organizations specially because of project nature and embossed role of human (queue, staff, key posts of organization) which face to complexity of organizational behavior science.

2-2- Organizational culture and knowledge management

Behavir of sharing tacit knowledge has a complex relation with the people within organization (staff, leaders and managers). There are enough thematic literature related to the clan culture in contrast to market and hierarchy which lead to facilitate and simplification of sharing knowledge behavior (Quinn and Cameron 2006). Researchers declare that acceptable values, expectations and definitions are existed now and organizational culture is an important factor. Discussion about organizational proceeds and it's complex link to organizational cultures is an interesting subject for many researchers (De Long and Fahey, 2000, Schein, 2004, McDer mott and O'Dell, 2001). Organizational behavior is defined with its culture rather than chief and superior managers. Applying strategies if has no contrast with organizational culture may has been affected in most organs (Jar nagin and Alocum, 2007).

Realizing and contradistinction of culture and specially organizational culture were the subject of numerous discussions. Researchers present various tools and theories in this topic (e.g. Cameron and Quinn, 2006; Schein, 2004).

Among various theories and models, competitive value framework (CVF) that had presented by Cameron and Quinn (2006), has widespread application in reserces and related to the organizational culture (e.g. Chin-Loy and Mujtaba, 2007; Roma' n-Vela' zquez,

2005). Main hypothesis of CFV is that, these organs can have one or a conflation of four types of culture which are mentioned bellow:

Clan culture: a friendly place in which people work there and share thier information there. The general feature of clan culture organs is teamwork, personnel's intercommunity programmes, high commitment from personnels to organization and also high commitment of company to personnels.

Adhocracy culture: these organizations are organic and non mechanism. These organs are dynamic, running, entrepreneur and creative. In this type of culture, personnel have power and they are encouraged to risk. Effective management is innovative and risk-centered.

Market culture: main consentration of organs in this type of culture is doing transaction with other beneficiary in order to create competitive advantage. Competitiveness and efficiency are the basis of organizations that market culture is their propulsion. Market cultur organization, being win is everything and this competitiveness is reduced personal level. Knowledge is the representative of power and this is undermined the sharing knowledge stability (specially tacit knowledge).

Heirachical: organizations with herachical culture are formulated basically and are formed from several herachical strctures. Standars processes manage personal's behavior and personnels have minimum power. Stability and predictability are linked to the emphasis on the principle's patronage and and long-term thoughts. Herachical culture is suppoting the efficient and standard process and best experiences and is formed from several horizontal (business units) and vertical (position), these are working together but they seperate from each other. Power structures and relations in these organs act as barriers of sharing tacit knowledge.

In organs which have no one type of culture, two or several types of culture might seen herachically. At this case, such culture knows as mixed organizational culture.

Quinn and Cameron has created organizational culture assessment instrument (OCAI) in relation with CVF. They declared that while they have created a longer version of OCAI, the shorter version gives outputs more accurate equal to the outputs of longer version about organizational culture (Cameron and Quinn, 2006).

Leader of organizational culture knows as the most important barrier in production and influence of knowledge (De. Long and Fahey, 2000).

Milne (2007) declares that personnel are motivated to keep knowledge generally rather than sharing knowledge, they have such tendency to keep their competitive advantage. Therefore, researchers

claim that it is possible to create organizational culture that encourage to sharing knowledge by proper definition of encouragement design (Al-Alawi et al., 2007; McDermott and O'Dell, 2001; Milne, 2007; Smith, 2001).

Cameron and Quinn (2006) have separated two main aspects of effectiveness of organizational culture:

- ✓ Flexibility and discretion, stability and control.
- ✓ Internal focus and convergence.

These two aspects contain four section of organizational culture together. These four sections are: clan, adhocracy, hierarchy and market. Every one of these factors express special effectiveness of organizational index (Cameron and Quinn, 2006).

In 2010, a research had been done in order to study effectiveness of various type of organizational culture on sharing knowledge behavior in Malaysian organs. Data were collected from the 7 organs and 362 persons. The important point in this research was that the basic differences between tacit and evident knowledge had been considered. The underlying assumption of this model was that premier types of culture have different effect on sharing knowledge behavior. Some of them have negative and the other have positive effect (Visvalingam Suppiah and Manjit Singh Sandhu, 2010). In this research, sharing knowledge behavior was studied by bellow indexes:

- Organizational relations
- Personal interactions
- Consultation
- Tendency to sharing knowledge freely (Davenport and Prusak, 1998)

In this study, OCAI was used to distinguish organizational culture and organ's features according to dominant type of culture on related organization. Behavior Survey was done by 2-selected standard questionnaire and data were collected by Likert five-point scale. Organizational relations, personal interactions, consultation and tendency to sharing knowledge freely had measured as four indexes in this research. Final results show that clan culture has positive effect on sharing tacit knowledge behavior. It can be derived that even less amount of clan culture in an organization can cause a movement toward sharing tacit knowledge behavior. Anyway, market culture and hierarchy culture have negative effect on this issue. These findings lead to new knowledge about organizational culture and sharing knowledge specially sharing tacit knowledge.

3. Methodology

3-1- Research Model

The studied model in this research is OCAI organizational model based on obtained experiences

(Visvalingam Suppiah and Manjit Singh Sandhu, 2010). Three variables are also added to this model:

Control profile: this type of culture expresses a kind of gradual and continuous improvement on organization. Generally, this type of culture is seen in large companies with no disorderliness and insufficiency on their production. This parameter's characteristics are: emphasis on discipline's adherence, emphasis on efficiency, emphasis on work based on principle, emphasis on hierarchy predictability, focus on authorities, slight and gradual change, emphasis on work's methods, errors and mistakes considerations and amount of violation of rules.

Collaborate profile: it includes of a set of individuals that they believe in something more that work itself and they work in order to express values. This type of culture is propagator of proper learning and work spaces. This parameter's characteristics are: common and equal values, commitment to organization, emphasis on social responsibilities, free and open communication, emphasis on learning, emphasis on cooperation, mutual trust, reliance and assurance, consideration to member's empowerments and attention to informal groups.

Create Profile: it contains a set of final aims and actions that is appeared in everybody's mind when they think to the word creativity. This type of culture requires to get rid of and away from past and following many ideas which lead to basic alteration in organizational activities and it's markets. This parameter's characteristics are: creativity and new ideas, emphasis on basic changes, emphasis on innovation, emphasis on experience and examination, emphasis on entrepreneurship, new and novel productions and emphasis on development.

Behavior of sharing tacit knowledge in this present study is also measured by four indexes like organizational communications, personal interactions, consultation and tendency toward sharing knowledge freely.

3-2- company case study: it includes a holding company with it's 33 subset of that. These companies have activity in transport industry.

3-3- Research stages:

Case study was done in two stages. In the first stage OCAI culture was studied by OCAI in order to distinguish organizational culture characteristics (a questionnaire with six aspect was used). Main questionnaire includes 6 questions that every one of them contains 4 selection switch or choices. Thus the main questionnaire contains 24 questions that every question is studied one of the six aspects of organizational culture. OCAI includes two forms with same items. One of these forma is assessed existing culture and the other is assessed optimal culture. In the first form, respondents are required to identify that

how much every 4 selection choice of six aspects is true in status quo. In the second form, respondents are required to identify ideal situation a in which how much every one of these four choice can describe optimal situation. In order to assess organizational culture situation in company, this questionnaire was used. In this questionnaire, a summary for every 4 types of culture was presented and every scenario is provided dominant features of every type of culture. In every question, four scenario are presented by 4 choices and respondents are required to allocate 100 considering points by attention to organ's similarity amount with four mentioned scenario in every question. This means that giving more points to one scenario indicate more power of special type of culture or it's dominant (Ranaei,2009). In order to measure qualitative judgments of respondents, gray scale number was used in culture assessment questionnaire. It is mentioned below:

Table 1. gray number scale for every one of criterions

Scale	
Very poor	
poor	
good	
Very good	

In order to summary of comments, the bellow equation was used:

$$\otimes G_{ij}^t = \left[\underline{G}_{ij}^t, \overline{G}_{ij}^t \right] = \frac{1}{t} \left[\otimes G_{ij}^1 + \otimes G_{ij}^2 + \dots + \otimes G_{ij}^t \right]$$

In this equation, $\otimes G_{ij}^t$ is the assessment amount for repondent number t at question number i toward criterion number j. ($1 \leq j \leq 6, 1 \leq i \leq 4$)

and it can be shown as the gary number $\otimes G_{ij}^t = \left[\underline{G}_{ij}^t, \overline{G}_{ij}^t \right]$

To calculate gray number of every types of organizational culture in current and ideal situation, bellow equation was used:

$$\otimes G_i = \frac{1}{6} \sum_{j=1}^6 \otimes G_{ij}, \quad i = 1, 2, 3, 4.$$

As respondent's point of view, dominant culture of organization was the culture with higher gray number. In order to select and camparise of gary numbers concept of degree of preference was used. Degree of preference is computed by bellow equation:

$$P(\otimes G_1 > \otimes G_2) = \frac{\max(0, \overline{G}_1 - \underline{G}_2) - \max(0, \underline{G}_1 - \overline{G}_2)}{(\overline{G}_1 - \underline{G}_1) + (\overline{G}_2 - \underline{G}_2)}$$

Sums of preferens degrees is always equall to one:

$$P(\otimes G_1 > \otimes G_2) + P(\otimes G_2 > \otimes G_1) = 1$$

4. Findings

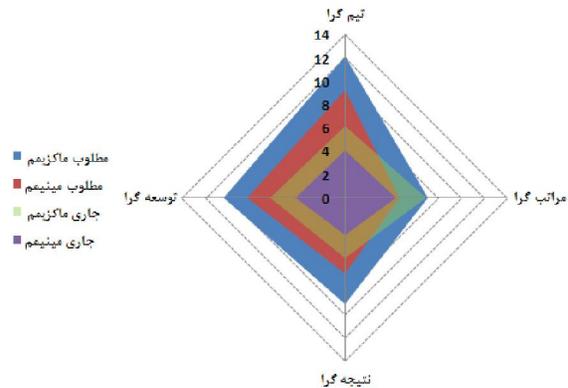
Questionnaire had given to 24 members of communities of practice which includes of 10 percent of statistical population.

According to findings, present and ideal situation in company are estimated based on various types of culture in organization and are mentioned in the bellow table:

Table 2: comparison of present current and ideal situation in organization according to type of culture

Culture type	Ideal status	Present status
Clan		
Developmental		
Rational		
Heirarchy		

Diagram 1: present and ideal status of organization basec on cultur type



مطلوب ماکزیم ideal

مطلوب مینیمم ideal

جاری ماکزیم present maximum

جاری مینیمم present minimum

Variables and measures of this questionnaire were defined as bellow:

Independent variable: ability to product knowledge by 12 item

Dependent variable: individualism and pluralism, power difference and avoidance of uncertainty were measured by three separate items. individualism and pluralism were measured by bellow gauges:

Company emphasis on cooperation and pluralism.

Company is encouraged both failures and successes.

Close cooperation is preferred to independent personal working.

Power difference was measured by bellow gauges:

There are specified boundaries and hierarchies in company which cannot be ignored.

Subordinates cannot be against their superior and must obey superior's orders.

Superior makes final decision and subordinate is not allowed to talk or discuss freely.

Avoidance of uncertainty was measured by bellow gauges:

Senior managers are encouraged increasing creative works and innovations while they know it may face to failure(and vice versa)

We believe that change in market cause to create new opportunities.

We prefer to do projects with high risk and high profitability.

Control variables: it includes size of company as the first variable which refers to all full time staffs and it is compromised by 5-point scale. Operation sol Inc. is the second control variables. In addition of market turmoil, technologic fluctuations and competition severity both have important effect on company's operation.

Market turmoil was measured by 4 items:

It is difficult to predicate volume and capacity of demands and combine them.

It is difficult to predicate client's changing demand.

Our demands are changed every week seriously.

New per-demands have wide difference with existing demands.

In order to measure technologic fluctuations, 4-point scale was used:

Our industry is individuated by significant and advanced technology.

In our industry, rate of breakdown is high.

It is difficult to predicate 3 future years technologic changes.

Technologic changes cause to create great opportunities in our industry.

Competition severity was measured by 4 items:

Competition in prices is a symbol of our industry.

Every work which had been done by company might be respond by others.

Approximately we hear new thing regard new competitive movement.

Competition is a gorge in our industry.

Compound validity is assessed the compatibility in organizations and it is obtained by Cronbach's alpha. Cronbach's alpha for all items was 7%. CFA was used for all set of canonical structures in order to confirmed compound validity and accuracy of structure. In 77% series or higher than of compound validity for every structure obtained more that7%. AVE for every structure was equal to 50% or higher. Single

factor test of all multiple item variables was extracted 7 factors which were included 71.2 percent of variance. The first factor included 25 percent. All variables in this study had high correlation coefficient.

In second stage of study, three new variables of model was studied by OCM questionnaire and finally correlation coefficient between variables was measured by SPSS.(summary of measurement table is available in appendix).

Based on findings:

Organizational culture has positive effect on sharing tacit knowledge behavior.

Market organizational culture has negative effect on sharing knowledge behavior.

Hierarchy organizational culture has negative effect on sharing tacit knowledge behavior.

Mixed organizational culture has positive effect on sharing tacit knowledge behavior by considering clan type of culture.

Mixed organizational culture has negative effect on sharing tacit knowledge behavior without considering dominant clan type.

Create profile of organizational culture has positive effect on sharing knowledge.

Control organizational culture has negative effect on sharing knowledge.

Collaborate profile of organizational culture has positive effect on sharing knowledge.

5. Conclusions

Competitive nature of organization is affected personnel and they prefer to work individual. Therefore, it seems that by creation of incentive policies for human resources, it is possible to encourage staffs to share knowledge in company. In addition, provide facilities for more intercommunication among personnel, they forced to report and tell story by practice in order to prevalence of clan culture behavior(for example in every monthly meetings), mutual commitment between personnel with emphasis on organ's strategy focus to improve team work, prevention of formalization of communities of practice and maintenance of voluntary nature of communities in order to enhance organizational culture and finally reinforcement of sharing knowledge behavior.

This study had faced to several restrictions. Findings of this study were obtained from the investigation on the data that collected from the Iranian project-centered organization and generalization of these findings to other companies must be accurate. The accuracy of the added new variables to previous model must be skeptical for similar companies.

In addition, there is other interested topic for future investigations. Organizational culture, current affairs

and daily activities of organizations like control system and organizational structure have important role in ability of knowledge production. On the other hand, internal organizational knowledge and output access of them play significant role in knowledge production. Therefore, future studies can cause to create general framework to study effective factors on ability of knowledge production.

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