

The Role of Communication Satisfaction in Enhancing the Effect of Knowledge Creation on Organizational Performance

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ABSTRACT

This study concerns enablers of knowledge management. It focuses on how organizational communication satisfaction together with knowledge processes- in particular the knowledge creation process in the SECI model of Nonaka and Takeuchi (1995)- influence creativity in organizations and affect organizational performance. Specifically, we had three aims: (a) to determine the levels of communication satisfaction and knowledge modes, (b) to study the effect of communication satisfaction on knowledge modes, and (c) to determine the role of knowledge modes in enhancing organizational performance through organization creativity. The researchers invited 47 Jordanian industrial shareholders corporations which are located in Amman listed as participants in Amman Stock Exchange to participate in the survey, however, the simple random sample encompassed twenty five, were investigated by self administering the Communication Satisfaction Questionnaire through mailing the questionnaire to their middle level managers. A total of 250 questionnaires were mailed to the participants. The returned questionnaires were 137. The data are analysed using descriptive statistics, simple and multiple regressions. The results showed that communication was perceived to have an impact on knowledge creation. Moreover, the results showed that knowledge creation affect organizational performance through the intermediary variable (organizational creativity).

Keywords: Knowledge Management, Communication Satisfaction, Organizational Creativity, Organizational Performance.

1. INTRODUCTION

Not only is knowledge management research fragmented across a variety of disciplines, it is also fragmented conceptually, particularly with respect to those knowledge concepts identified as significant for organizations. These include knowledge management enablers and knowledge creation with a focus on the process perspective, as well as their relationship to performance.

There are diverse views of what determines effective knowledge management, and there are few well-tested frameworks that unify a comprehensive range of concepts such as those mentioned above in a relatively easy to understand and practical way.

As such, one of the principal goals of this study is to develop an integrated framework, which can explain and guide the successful and effective management of knowledge in organizations. Such a framework should benefit the academic research in knowledge management as well as help managers in their efforts to best locate organizational resources and to appropriately focus its knowledge management efforts for optimum organizational performance.

In recent times, much has been written and many theories have been offered regarding the phenomenon of knowledge management and its implementation. However, little empirical research has been conducted to support these theories, as the majority of studies reported in the literature come from single cases to small sample sizes, where the generality of the results is significantly reduced (Gold, 2001). It is recognized that the contextual nature of knowledge management poses a challenge in this regard, and so there are two main aims that motivate this research.

The first aim is to create a potentially generalized model which combines the most widely accepted

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knowledge management enablers and knowledge creation processes, from both a social and technological perspective, with factors of communication satisfaction, which relates all these to organizational performance. The resulting integrative framework should address the strategic needs of organizations and provide them with indicators, which should help them to manage their knowledge effectively. Managers face a dilemma in selecting the most effective knowledge management enablers and processes to solve organizational problems. The research findings should provide managers with guidelines as to which of the knowledge management enablers and knowledge conversion modes they need to focus on as well as aspects of communication satisfaction, in order to optimize their performance.

Rigorous development of such a model of the general salient issues is warranted, especially if it leads to a means of measurement of relevant constructs. Thus, the second aim of this study is to test the integrative framework empirically. An exploratory study is undertaken to build the survey (instrument) of the constructs followed by a confirmatory analysis. Based on the domain definitions grounded in the literature, this research represents original work from an empirical and practical perspectives.

2. IMPORTANCE OF STUDY

The empirical results of this study are of significance to organizations because they provide organizations with advice as to which of the knowledge management enablers and knowledge conversion modes have a significant impact on the organizational performance. This can help organizations to focus more on such knowledge management enablers and knowledge conversion modes. This is of paramount importance since organizations make significant investments of time, money and personnel when they embark on knowledge management initiatives (Parikh, 2001). A better understanding of the relationship between knowledge management enablers and knowledge creation process and organizational performance may increase their ability to make wise choices regarding how these resources are used and managed. These decisions are also important from a global perspective. As the global economy moves to a more knowledge-based one with advances in

technology and telecommunication networks, the long-term well being of organizations demand that the implementation of strategic business initiatives, such as knowledge management initiatives, be done effectively and successfully. The degree to which Jordanian companies will realize benefits in the global market will depend on their ability to recognize and harness these changes and develop and apply these changes to their unique situations. To this effect extensive research must be employed to see that efforts are cost-effective and sustainable.

3. THE RESEARCH PROBLEM

Researchers have investigated knowledge management factors to explore which of them are essential for managing knowledge effectively. Despite its compelling nature, very few studies have tried to decipher the relationships among these factors. According to Lee and Choi (2003), most studies have focused on the relationships between factors in isolation. Therefore, this research intends to integrate these factors.

Moreover, Very few empirical studies adopt a process-oriented perspective on organizational knowledge. Knowledge creation or transfer would benefit companies more than knowledge itself because knowledge is not primarily about facts, but more about context-specific characteristics (Teece, 2000). Consequently, another challenge is to leverage a process-oriented perspective. Based on the available literature, although an integrative perspective model of the knowledge variables based on relevant theories is a necessity, practitioners and researchers have not yet tried one (Lee and Choi, 2003). Ndlela *et al.* 2001) suggest that enterprise should adopt a holistic and integrated approach when establishing a knowledge management program. This research is based on Lee and Choi's (2003) model, which delineates an integrative view of knowledge management enablers, processes and organizational performance within the framework of systems thinking. Systems thinking theory considers problems in their entirety (Rubenstein *et al.*, 2001). This theory is better able to describe complex and dynamic characteristics of knowledge management in a systematic fashion. In sum, this study proposes a research framework as shown in Figure (1).

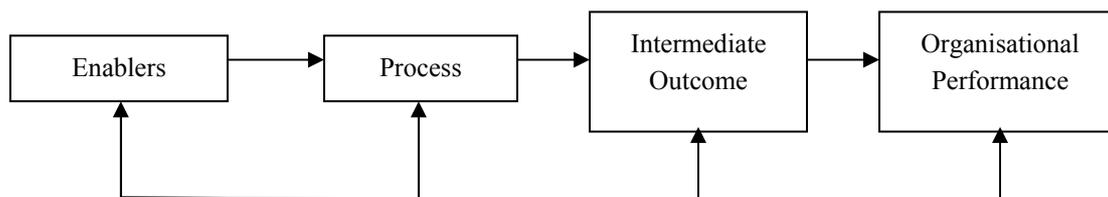


Figure 1. An Integrative Research Framework for Studying Knowledge Management, Adapted from (Lee and Choi, 2003, p. 182).

4. STUDY OBJECTIVES

This study aims to achieve the following objectives:

- First: Determine the levels of communication satisfaction and knowledge modes.
- Second: Study the effect of communication satisfaction on knowledge modes.
- Third: Determine the role of knowledge modes in enhancing organizational performance through

organization creativity.

5. RESEARCH MODEL

As it can be seen in figure (1), the research model is adapted and edited from Lee and Choi (2003) with a major focus on the communication satisfaction as knowledge management enabler.

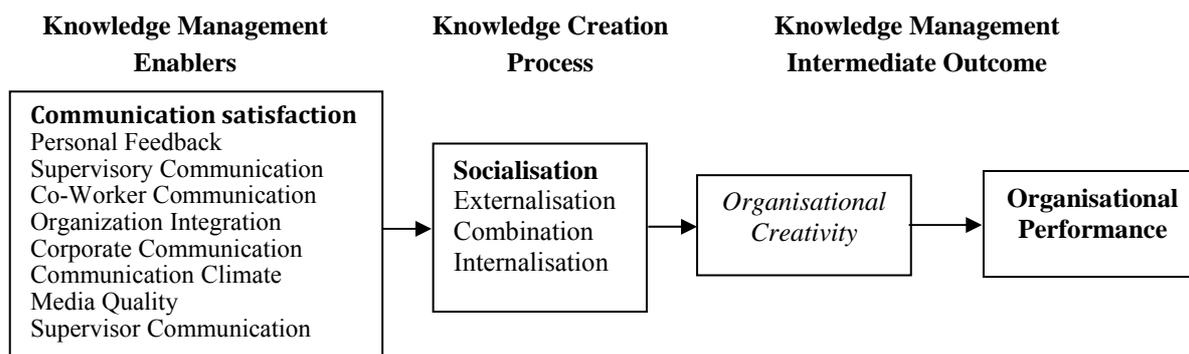


Figure 2. A Research Model Adapted and Edited from Lee and Choi (2003).

6. STUDY HYPOTHESES

Based on the research model, the following hypotheses are presented:

First Hypothesis:

Ho₁: there is no direct effect of the communication satisfaction construct on socialization.

Second Hypothesis:

Ho₂: there is no direct effect of communication satisfaction construct on externalization.

Third Hypothesis:

Ho₃: there is no direct effect of communication satisfaction construct on combination.

Fourth Hypothesis:

Ho₄: there is no direct effect of communication satisfaction construct on internalization.

Fifth Hypothesis:

Ho₅: there is no direct effect of the knowledge creation modes on organizational creativity.

Sixth Hypothesis:

Ho₆: there is no direct effect of organizational creativity on organizational performance.

7. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Knowledge Management Enablers

Nonaka and Takeuchi (1995) use “enabling conditions for organizational knowledge creation”, while (Davenport and Prusak, 1998) use “conditions contributing to organizational effectiveness by enabling knowledge projects”. Instead of conditions, some authors such as Nevis *et al.* 1995) use terms such as ‘action’, or activities that facilitate organizational learning and,

“facilitate the transfer of knowledge”.

According to Migdadi (2005), these enablers and facilitators include a healthy culture, and support infrastructure (Beckman, 1999); management support and proactive leadership (Beckman, 1999); empowerment of employees (Davenport and Prusak, 1998; Liebowitz and Beckman, 1998); understanding knowledge management as a business strategy (Ruggles and Holtshouse, 1999); strong communication channels; and a commitment to developing and sustaining a climate for learning within the organization (Liebowitz and Beckman, 1998).

This study focuses on communication satisfaction as a knowledge management enabler and its impact on the knowledge creation (knowledge conversion modes), which in turn, affects organizational performance through organizational creativity (the intermediary variable).

Communication Satisfaction

Communication is viewed as the social glue, which ties members, subunits, and organizations together (Rapert and Wren, 1998). Researchers have concluded that understanding communication affects various aspects of organizational life is of critical importance.

The Communication Satisfaction construct, operationalized by Downs and Hazen in 1977, has become a successful stream in organizational communication. Since then, many studies have been completed using the “Communication Satisfaction Questionnaire”.

According to Varona (1996, pp. 4-5), Downs and Hazen explored the multidimensionality of communication satisfaction using an original questionnaire called “Communication Satisfaction Questionnaire”. The eight factors that resulted in this analysis were described by Downs and Hazen, as follows:

Corporate Communication deals with the broadest kinds of information about the organization as a whole. It includes items on notifications about changes, information about the organization’s financial standing, and information about the over-all policies and goals of the organization. **Personal Feedback** is concerned with the workers’ need to know how they are being judged and how their performance is being appraised. **Organizational Integration** revolves around the degree to which individuals receive information about their immediate environment. Items include the degree of satisfaction with information about departmental plans, the requirements of their job, and some personnel news. **Supervisory Communication** includes both the upward

and downward aspects of communicating with superiors. Three of the principal items are the extent to which superiors are open to ideas, the extent to which superiors listen and pay attention, and the extent to which superiors and supervisors offer guidance to their employees in solving job-related problems. **Communication Climate** reflects communication on both the organizational and personal levels. On one hand, it includes items such as the extent to which communication in an organization motivates and stimulates workers to meet organizational goals and the extent to which it makes them identify with the organization. On the other, it includes estimates of whether or not people’s attitudes toward communicating are healthy in the organization. **Co-Worker Communication** concerns the extent to which co-workers and informal communication is accurate and free flowing. This factor also includes satisfaction with the activeness of the grapevine. **Media Quality** deals with the extent to which meetings are well-organized, written directives are short and clear, and the degree to which the amount of communication is about right. **Supervisor Communication** focuses on upward and downward communication with subordinates. This factor includes subordinate responsiveness to downward communication, and the extent to which subordinates initiate upward communication.

Communication Satisfaction vs. Knowledge Creation

Based on a comprehensive and intensive literature review, few studies have examined the relationship between communication and knowledge creation. To fill this gap, communication satisfaction, as a knowledge management enabler will be incorporated into the model of this research, it will examine empirically the impact of communication satisfaction on knowledge creation, which in turn, affects organizational performance through organizational moderator (e.g. organizational creativity).

Communication Satisfaction construct incorporated into the research model (Figure 2) is comprised of eight factors: Organizational Perspective, Personal Feedback, Organizational Integration, Supervisory Communication, Communication Climate, Horizontal Communication, Media Quality, and supervisor Communication.

In a traditional model, large organizations normally have many layers of managers where formal reporting structures are more detailed at the top than at the bottom. Decision making flows vertically up and down this chain of command, and often communication also flows only up

and down this chain of command. This kind of communication/decision making can significantly slow organizational processes, which can be very determined to the organization. Formal organizational structures that constrain reporting solely within divisional channels limit each division's access to knowledge accumulated by other divisions of the corporation. Such 'vertical' structures raise barriers to knowledge transfer between different divisions because each division is operated largely as if an independent firm (Davenport and Prusak, 1998).

Most of the communication functions are "top down" and too slow to meet employee needs. It takes too much time for information to filter down through every level of the organization. Effective top-down and bottom-up communication is very important in making existing knowledge profitable to the organization, however, effective communication across hierarchies is very tricky (Kluge *et al.*, 2001, pp. 75-77) and they make knowledge very difficult to transfer. Improving knowledge access, as discussed by Davenport *et al.* 1998), has implications for organizational structure as well as technological structure. The organizational structure can, for example, support knowledge maps, expert networks, job rotation, task groups and teamwork. Teamwork can be one of the best ways to integrate across boundaries. As learning and knowledge transfer need to be coordinated and as real teams are self-managing, a team structure seems to be well suited for learning as well as transfer of knowledge. As much knowledge in an organization is tacit and stored in the heads of its members, the knowledge transfer system has to facilitate dialogue and externalization, as well as combination and socialization. High social interaction among group members enables them to understand each other better and to engage in the exchange of tacit knowledge necessary for solving complex problems (Nonaka, 2000). In addition, such interactions help them to better evaluate each other's contributions to various aspects of group projects and provide specific feedback, which in turn will help the group members to further sharpen their knowledge (Migdadi, 2005). The level of social interaction among organization members positively influences the quality of the knowledge created. In addition, prior research suggests that, "synergistic effects have their roots in group interaction process". Extensive communication among the members is critical to enhance learning. Moreover, social interaction influences knowledge development in organizations (Barker and Camarata,

1998). Emergent knowledge is knowledge that no member possessed prior to the group discussion, evolves through group discussion and interaction. This can occur when a comment offered by one member stimulates another to form a new idea, or when disparate views of members lead to the development of an alternative by another member that resolves the differing viewpoints.

Acceleration knowledge flow in organizations is a fundamental research issue in knowledge management. Knowledge flows are essential when information is to be transferred to a person or an organization that needs it (Alavi and Leider, 2001). Communication processes and information flows together build up knowledge flows, which are used to transfer from one place or format to another. If an organization supports communication networks that operate freely, where knowledge providers and knowledge seekers can access information and knowledge through the shortest path, it will certainly enhance knowledge creation and knowledge transfer in the organization.

(Davenport and Prusak, 1998), emphasize management support for knowledge management as for almost every other type of change program. Good leaders articulate visions, are engaged in their implementation, interact frequently with members, and become actively involved in educational programs (Nevis *et al.*, 1995). Good senior management also sends messages that organizational learning and knowledge management are critical, clarifies what types of knowledge are most important, provides funding and other resources for them (Davenport *et al.*, 1998; Davenport and Prusak, 1998). Therefore, Nevis *et al.* 1995) further assert the importance of multiple advocates for knowledge related issues, that is, the more advocates who promote a new idea, the more rapidly and extensively the learning will take place. Employee at all levels will advance new ideas and methods. Individuals develop new ideas and new knowledge during the creation process by converting their personal experiences and images into personal insights (Bryant, 2003). These insights then can be shared with others on the team. Leaders encourage employees to share their ideas by creating a climate that is receptive to new ideas. Employees may be more likely to share knowledge when they are praised by managers, have knowledge sharing as part of their performance evaluations and are provided financial and non-financial rewards for sharing (Bryant, 2003).

Nonaka and Takeuchi (1995, pp. 74-83) emphasize five enablers that promote the knowledge spiral. The first one is organizational intention, which is defined as the organization's aspiration to reach its goals, and it springs from the corporate strategy in which the critical element is to create a vision about what kind of knowledge should be developed and operationalized into a management system, where organizational strategy proposed as one of contextual factor. A special case of strategy, but important for learning and transfer of knowledge, is a communication strategy (Daft and Huber, 1987). They assert that a communication strategy is encouraging face-to-face meetings and discussions to interpret and make meaning and of equivocal ties and transfer non-routine information, and to encourage rapid cycles among managers, as well as to set few rules.

Strategy, goals, and concepts associated with knowledge creation and transfer must be clear to everyone in the organization (Davenport and Prusak, 1998). A compelling vision and conceptual architecture build a common language and define key domains for knowledge. Such domains create knowledge structures, often based on the individual pattern of use of concepts (Davenport and Prusak, 1998, p. 159).

Nevis *et al.* (1995) note the importance of measurement as a support for learning. Nevis *et al.* (1995) also indicate that organizations strive for specific and quantifiable measurement. Measurements are necessary to monitor the strategy and to enable learning and knowledge transfer. Measurement also allows feedback and learning by measuring performance gaps, as stressed by Nevis *et al.* (1995).

A second effect of measurement is its impact on motivation. However, motivational aids or incentives for knowledge creation and transfer should not be trivial (Davenport *et al.* 1998; Davenport and Prusak, 1998, p. 158). They should be long term incentives tied in with the rest of the evaluation and compensation structure (Davenport and Prusak, 1998, p. 158). Managers can lead the organization to actively and dynamically create knowledge by establishing enabling conditions. Managers have direct control over what activities are rewarded, what behaviors are encouraged, and how work will be valued in the organization. These factors influence employees' motivation and ability to develop new knowledge.

Knowledge Creation

From the process perspective, knowledge

management concentrates on routing knowledge flows and on encouraging knowledge creating and sharing activities (Lee and Choi, 2003, p. 9).

The knowledge-creating process can't be managed in the traditional sense of 'management', which centers on controlling the flow of information (Nonaka *et al.*, 2000). However, very little attention is given to how knowledge is created and how the knowledge creation process can be managed. According to Teece (2000, p. 36), knowledge assets cannot be bought and sold and need to be built in-house by organizations, and "they must also be exploited internally in order for full value to be realized by the owner". An essential component of what is required to become a knowledge-enabled organization is to ensure that all employees are able to locate, access, and utilize the knowledge and skills they need to meet their individual and company goals. In conjunction with this line, Bloodgood and Salisbury (2001) emphasized that every organization needs to identify where knowledge resides in the organization. It is very important especially when designing strategies "in order to ensure knowledge is being created, transferred and protected in the right way and with the right individuals" (Bloodgood and Salisbury, 2001, p. 55). With reliable collections of knowledge assets, then knowledge can be transferred to the respected person at the right time and at the right place with great accuracy.

Creating and maintaining knowledge is a process of sharing both tacit and explicit knowledge between individuals in an organization. The transition from tacit to explicit knowledge is necessary to make knowledge communicable, which is important for learning as well as for transfer of knowledge. A problem known as communication skill gap is that people are aware that they know but incapable of expressing their knowledge to others, Such a skill gap has traditionally been overcome by training and practicing under the supervision of an expert (Bukowitz, 1998).

This is actually the extensive theory of knowledge creation and transfer of knowledge presented and developed by Nonaka and Takeuchi (1995), which will be adapted in this study. The model consists of four knowledge conversion modes: socialization, externalization, combination, and internalization.

Socialization is the process of converting tacit knowledge into tacit through shared experiences (Nonaka and Konno, 1998). Since tacit knowledge cannot be expressed by spoken language, the conversion has to take

place through experiences, such as observation, imitation, and practice. The researchers added that socializing within the originating provides a rich and meaningful platform for face-to-face natural interaction. Sometimes labeled as co-located communication, this enables a medium where multiple senses and means can be used to convey knowledge. An example of socialization is when team members work together. Effective teams include people from different backgrounds and with different and complementary skills. They can learn from each other while performing a team task. The learning takes place through socialization when they work close together, as well as during the many team conversations that take place as the team goes through the processes of externalization and combination. Knowledge transferred through communication can then be applied directly to the team task and be internalized.

Externalization is the process of articulating tacit knowledge into explicit knowledge in order to be communicated (Lee and Choi, 2003). When tacit knowledge is made explicit, knowledge is crystallized, which allows it to be shared by others, and it becomes the basis of new knowledge. Concept creation of new product development and a quality control circle are examples of this conversion process. The means of this conversion are the use of different metaphors, analogues, concepts, hypotheses and models.

Combination was defined by Hussi, T. (2004) as the process of converting explicit knowledge into more complex and systematic sets of explicit knowledge as it is communicated to others and merged with their knowledge. Media used in this process include common discussion at a meeting or training session as well as documents, telephone calls, or digital networks. Combination mainly serves the purpose of integrating knowledge into organization's knowledge base and disseminating it throughout the organization.

Internalization is the process of embodying explicit knowledge into tacit knowledge. The explicit knowledge may be embodied in actions and practice, so that the individual acquiring the knowledge can re-experience what others go through. According to Sabherwal *et al.* (2003), individuals could acquire tacit knowledge alternatively, in virtual situations, either vicariously by reading or listening to others' stories, or experientially through simulations or experiments. Learning by doing, learning by observing, face-to-face meetings, and on-the-job training are some of the means individuals acquire

knowledge through the internalization processes.

Knowledge Creation vs. Organizational Creativity

In their research, Vicari and Troilo (2000) believe that there is a strong link between knowledge and creativity. They also believe that knowledge plays an important role in the ability of the organization to be creative. Woodman *et al.* (1993, p. 301) state that, "even though previous experience or knowledge could lead to functional fixedness that prevents individuals from producing creative solutions, on balance it is hard to conceive of any creative behavior that is somehow knowledge free". Brockman and Morgan (2003) also stress the importance of existing knowledge by claiming that it serves as the base for building new ideas or reconfiguring existing ones.

According to Verona and Ravasi (2003), the Oticon's (a company) findings show that it is the co-presence and the co-joint use of knowledge creation, absorption, and knowledge integration that provides the very foundation of continuous innovation.

Creativity and innovation flow from a core set of knowledge and skill cultivated within the organization. Organizational creativity connects and rearranges knowledge to create new, often surprising ideas that others judge to be useful (Koh, 2000). Creativity is not necessarily related to the amount of knowledge that an employee possesses, but rather the way in which knowledge is created and shared. Thus processes of knowledge creation unleash organizational creativity (Lee and Choi, 2003).

Organizational Creativity

Tomas (1999) defines creativity in terms of the generation of original ideas. In contrast, Shalley and Perry-Smith (2001) argue that it is not enough to only be original. Also, appropriateness is vital in order to distinguish creative ideas from surreal ideas that may be unique but have unlawful or highly unrealistic implications.

The topic of creativity has inspired voluminous research aimed at explaining why certain individuals, teams or organizations are more likely than others to formulate novel and useful ideas, processes, services or products. For example, Andriopoulos (2001) indicates that the literature review shed light on five major organizational determinants that enhance creativity in a work environment: organizational climate; leadership style; organizational culture; resources and skills; and structure and systems.

Organizational Creativity vs. Organizational Performance

Organizational creativity represents a dramatic organizational change in the knowledge economy. In their comments on the benefit of studying creativity in complex social systems, Woodman *et al.* (1993, p.293) state, "creativity for individuals and organizations-doing something for the first time anywhere or creating new knowledge- represents a dramatic aspect of organizational change that may provide a key to understanding change phenomena and, ultimately, organizational effectiveness and survival."

Creativity is the basic building block of invention and thus innovation. In turn, organizational innovation is the successful implementation of creative ideas within an organization, used for long-term organizational success. Innovation and its management emerged as viable concepts to improve organizational performance in increasingly competitive times (Oldham and Cummings, 1996). Scholars have linked innovativeness to organizational performance, suggesting that a firm needs to be innovative "to gain a competitive edge in order to survive and grow" (Deshpande *et al.*, 1993).

If a company wants to sequence product innovations, it must create a context that spurs creativity from all parts of the organization at any time (Veron and Ravasi, 2003). Without creativity, organizations may fail to adapt to the internal as well as external changes (Lee and Choi, 2003), and thus lose their knowledge advantage.

Organizational change goals typically include various aspects of organizational performance such as organizational effectiveness, survival, improvement, or innovation (Lee and Choi, 2003).

Organizational performance can be thought of as the output of a process that encourages creativity (Sawhney and Prandelli, 2002). Thus, improvements of creativity might lead to better organizational performance (Migdadi, 2005).

Organizational Performance

Methods for measuring organizational performance in knowledge management can be categorized into four groups: financial measures, intellectual capital, tangible and intangible benefits, and a balanced scorecard. Tangible benefits are strategic and financial: additional profits, improving market share, and sustaining competitive advantage. Intangible benefits are learning or knowledge-based: learning specific skills and competencies, and learning how to learn from

collaborations (Lee and Choi, 2003).

According to Marr *et al.* (2003), there is a consistent relationship between most intangible investments and subsequent earnings and value creation in business corporations. Currently, empirical research in capital markets is trying to provide further evidence on the existence of a positive association between different intangible investments and corporate earnings. In addition, researchers now are concerned for the value relevance of intangibles to provide insight on the relationship between intangible investments and value creation.

According to Arora (2002), the measurement of benefits/progress of knowledge management is necessary for an organization to ensure that the objective of knowledge management exercise is being fulfilled. He claims that organizations, which use Balanced Scorecard (BSC) for strategy deployment, can effectively implement knowledge management in their organizations by developing and deploying a knowledge management index. The concept of the balanced scorecard emphasized that financial measures are not the only important measures of an organization's effectiveness. The scorecard takes a balanced look at the organization because it focuses on: Leading and lagging drivers of performance; financial and non-financial measurements; and, quantitative as well as qualitative measures of performance (Fletcher and Smith, 2004).

In this study, the researchers adopt a specific measure, which is developed and validated by Deshpande *et al.* (1993). This measure can be thought of as a variation of the balanced scorecard method. The balanced scorecard retains financial performance and supplements it with measures on the drivers of future potential (Migdadi, 2005). Moreover, since balanced scorecard shows cause and effect links between knowledge components and organization strategies, it is more useful than intellectual capital or a tangible and intangible approach (Kaplan and Norton, 2000).

8. RESEARCH METHODOLOGY

To examine the points previously discussed and address the issues raised, the primary research question is: How does communication satisfaction as a knowledge management enabler contribute to the knowledge creation process?

As theory related to this problem is in an early stage of development, an exploratory approach is undertaken in

answering these questions, followed by a multi regression analysis. There are two phases in this approach:

Phase 1: The development of a conceptual model and integrative framework based on the literature.

Phase 2: An empirical evaluation of the validity of the framework from phase one.

The methodology used for the quantitative phase of the study involves the development and administration of a survey. A questionnaire is developed and subjected to a pilot study for validation. This is followed by a main study in which the survey is administered to a large group of middle managers in various Jordanian enterprise industries. Survey data was analyzed by conducting multiple regression analyses.

Data and Procedure

The population and sample of this study is comprised of the middle level managers based in the Jordanian industrial shareholders corporations which are located in

Amman listed as participants in Amman Stock Exchange. The researchers have obtained the location from Amman Stock market website. The questionnaire was hand-delivered to 250 managers of 47 corporations. The recipients who agreed to participate in the anonymous survey filled out the questionnaire and returned them. An telephone call reminder was made to each subject in the following week. As a result, a total of 142 responses were returned by the deadline, five questionnaires were excluded due to incomplete answers, and 137 responses were used for data analyses, which means that the response rate was approximately 55%.

Sample Characteristics

As it has been mentioned, 137 middle managers have participated in this study, Table (1) depicts the characteristics of study sample according to their gender, age, experience in organization, experience in title, education, and specialization.

Table 1. Sample description.

	Variables	Frequency	Percent
Gender	Male	86	67.7%
	Female	41	32.3%
Age	Less than 25	10	7.9%
	25-40	71	55.9%
	41-50	34	26.8%
	51 and more	12	9.4%
Experience in organization	Less than 3	35	27.6%
	3-5	41	32.3%
	5-10	25	19.7%
	11 and more	26	20.5%
Experience in title	Less than 3	36	28.3%
	3-5	40	31.5%
	5-10	30	23.6%
	11 and more	21	16.5%
Education	Diploma and less	18	14.2%
	Bachelor	77	60.6%
	Master	21	16.5%
	Phd	11	8.7%
Specialization	Administration	38	29.9%
	Financial	33	26.0%
	IT	17	13.4%
	Law	4	3.1%
	Other	33	26%

Measures

Data were collected from middle managers via a combination of face to face survey methods followed by an e-mail reminder. 10 middle managers in Jordanian corporations and three academics reviewed the primary-

questionnaire to improve clarity and identify any unfamiliar or unclear wording and resolve any issue accordingly.

The research questionnaire collected information on Demographic characteristics such as Gender, Age, Experience in organization, Experience in title, Education, and Specialization. It also used five-Likert scale ranges from "strongly disagree" to "strongly agree" to solicit perceptions pertaining to the independent, intervening and dependent variables, which were measured via the items described below. The research questionnaire included 39 items to assess the independent construct; Communication satisfaction. This construct comprised eight dimensions (variables); Corporate communication, Personal feedback, Organizational integration, Supervisory communication, Communication climate Co-worker communication, Media Quality, and Supervisor communication. Downs and Hazen, 1977; Varona, 1996).

The dependent construct Knowledge creation processor (knowledge conversion modes) has been measured by 19 items. 5 items measured for each of the following variables Socialization, Externalization, and Combination respectively. In addition, 4 items were used to measure the Internalization mode (Lee and Choi, 2003).

Organizational creativity variable has been measured by 5 items and Organizational performance variable has been measured by 5 items too (Lee and Choi, 2003).

Cronbach's Alpha reliability coefficients were calculated for variables of study (communication satisfaction =0.82, Knowledge management =0.86, creativity= 0.89, and performance =.93) which give an

indicator that reliability coefficient were very good and the questionnaire is reliable (Sekaran, 1992).

Data Analysis Method

Data analysis has been conducted through the following statistic methods:

- 1- Frequency and percent to describe the sample characteristics.
- 2- Mean, Standard deviation, and Pearson correlation to describe the variables of study.
- 3- Simple and multiple regressions to test the hypotheses of study.

Hypotheses Testing

The mean and standard deviation of four variable construct of the four variables show are little to left on the five point scale denoting average in communication satisfaction, knowledge modes, creativity and organizational performance, the Pearson correlation matrix of the eight independent variables investigated in this study shown in Table (2) as seen the highest correlation was between Supervisory Communication and Organizational Integration equal 0.87 which indicate there is no inter-correlation the independent viable that support the model of study.

First Hypothesis

Ho₁: There is no direct effect of the communication satisfaction construct on socialization.

Table 3. Results of multiple regression analysis between the communication satisfaction construct and socialization.

Model	B	Beta	T	Sig.
Constant	1.878		8.417	.000
Communication Climate	-.08267	-.232	-.574	.567
Supervisory Communication	.198	.341	1.558	.122
Organizational Integration	-.03109	-.088	-.214	.831
Media Quality	.135	.400	.909	.365
Co-worker Communication	-.176	-.335	-1.760	.081
Corporate Information	-.06345	-.253	-.493	.623
Personal Feedback	.02648	.132	.248	.805
Supervisor Communication	.237	.340	2.459*	.015
R ²	0.171			
F	3.54*			
Sig	0.004			

*P<0.05

The results of multiple regression analysis, regressing the eight independent variables against socialization, is

shown in Table (3). As it can be seen in the table, the eight independent variables explained 17.1% of the

variance in socialization ($R^2=0.171$, $F=3.54$, $Sig=0.004$), thus the hypothesis that the communication satisfaction explains the variance in socialization was substantial. As knowledge sharing is, of course, a form of communication, this construct is expected to be of influence here. Consistent with this Dennis (1974) mention the key factors in the communication climate which are horizontal information flow, openness, vertical information flow, and reliability of information. Therefore communication climate encourages knowledge sharing and creation.

When the communication satisfaction dimensions are taken separately. Beta calculation showed that the supervisor communication was significant ($\beta=0.34$, $Sig<0.05$), while the other dimensions had no direct effect. This is also in agreement with Bandura (1997), which indicate that managers must themselves begin sharing knowledge they desire from employees.

Second Hypothesis

H₀₂: There is no direct effect of communication satisfaction construct on externalization.

The results of multiple regression analysis, regressing the eight independent variables against externalization, is shown in Table (4). As it can be in seen table, the eight independent variables explained 45.1% of the variance in externalization ($R^2=0.481$, $F=13.654$, $Sig 0.000$), thus the hypothesis that the communication satisfaction explains the variance in externalization was substantiated. In order to cause dialogue and collective reflection, managers must redirect employees' obligations for knowledge sharing, they also must acknowledge and emphasis the employer's recognition of reciprocal obligations to provide rewards for increased knowledge sharing (O'Neill and Adya, 2007).

When the communication satisfaction dimensions are taken separately. Beta calculation showed that the organizational integration ($\beta=0.685$, $Sig<0.05$) and co-worker communication ($\beta=0.416$, $Sig<0.05$) were

significant, while the other dimensions had no direct effect. This is in line with Denise *et al*, (2007) who say, the ideal context for organizational knowledge creation can be organized in three dimensions: (1) environments and relationship; (2) managerial policies; and (3) structures: horizontal, few hierarchical levels, without departmental barriers, with a communication infrastructure that will support and facilitate the flow of information and ideas.

Third Hypothesis

H₀₃: There is no direct effect of communication satisfaction construct on combination.

The results of multiple regression analysis, regressing the eight independent variable against combination, is shown in Table (5) as can seen the eight independent variable explained 77.1% of the variance in combination ($R^2=0.771$, $F=49.558$, $Sig 0.000$) Thus the hypothesis that the communication satisfaction explain the variance in combination was substantial. Combination is the passage of an individual's explicit knowledge to the explicit level of the other. It is the exchange of codifiable knowledge occurring by means of documents, lectures, meetings, telephone and other means of communication (Dennise *et al.*, 2007).

When the communication satisfaction dimensions are taken separately. Beta calculation showed that the Communication Climate ($\beta=0.830$, $Sig<0.05$), Supervisory Communication ($\beta=0.319$, $Sig<0.05$) and supervisor Communication ($\beta=0.282$, $Sig<0.05$) were significant, while the other dimensions had no direct effect. Communication climate is the atmosphere in an organization regarding accepted communication behavior which must encourage knowledge sharing and receiving as it has been mentioned earlier. Also, open vertical communication is necessary since it is the medium through which knowledge capital of the organization members can be activated (Gebert *et al.*, 2003).

Table 4. Result of multiple regression analysis between the communication satisfaction construct and externalization.

Model	B	Beta	T	Sig.
Constant	1.678		6.797	.000
Communication Climate	.221	.445	1.387	.168
Supervisory Communication	.106	.131	.754	.452
Organizational Integration	.338	.685	2.101*	.038
Media Quality	-.01357	-.029	-.083	.934
Co-worker Communication	.305	.416	2.760*	.007

Model	B	Beta	T	Sig.
Corporate Information	-.191	-.547	-1.344	.181
Personal Feedback	.06371	.227	.539	.591
Supervisor Communication	.147	.151	1.381	.170
R ²	0.481			
F	13.654*			
Sig	0.000			

*P<0.05

Table 5. Result of multiple regression analysis between the communication satisfaction construct and combination.

Model	B	Beta	T	Sig.
Constant	.794		3.862	.000
Communication Climate	.517	.830	3.894*	.000
Supervisory Communication	.324	.319	2.767*	.007
Organizational Integration	-.08287	-.134	-.619	.537
Media Quality	-.148	-.251	-1.084	.281
Co-worker Communication	-.158	-.172	-1.718	.088
Corporate Information	-.02536	-.058	-.214	.831
Personal Feedback	.06871	.196	.698	.486
Supervisor Communication	.222	.282	2.504*	.014
R ²	0.771			
F	49.558			
Sig	0.000			

*P<0.05

Fourth Hypothesis

Ho₄: There is no direct effect of communication satisfaction construct on internalization.

The results of multiple regression analysis, regressing the eight independent variables against internalization, is shown in Table (6), as it can be seen in the table, the eight independent variables explained 83.6% of the variance in internalization (R²=0.836, F= 75.288, Sig=0.000), thus the hypothesis that the communication climate explains the variance in internalization was substantial. According to Sabherwal *et al.* (2003), individuals could acquire tacit knowledge alternatively, in virtual situations, either vicariously by reading or listening to others’ stories, or experientially through simulations or experiments. Learning by doing, learning by observing, face-to-face

meetings, and on-the-job training are some of the means individuals acquire knowledge through the internalization processes.

When the communication satisfaction dimensions are taken separately. Beta calculation showed that the communication climate (β=0.449, Sig<0.05) was significant, while the other dimensions had no direct effect. Communication climate consists of horizontal information flow, openness, vertical information flow, and reliability of information which should encourage knowledge sharing and creation (Dennis, 974).

Fifth Hypothesis

Ho₅: There is no direct effect of the knowledge creation modes on organizational creativity.

Table 6. Result of multiple regression analysis between the communication satisfaction construct and internalization.

Model	B	Beta	T	Sig.
Constant	1.071		4.686	.000
Communication Climate	.368	.449	2.493*	.014
Supervisory Communication	.08813	.066	.678	.499
Organizational Integration	-.02476	-.030	-.166	.868

Model	B	Beta	T	Sig.
Media Quality	.118	.151	.774	.441
Co-worker Communication	-.06087	-.050	-.596	.553
Corporate Information	.197	.342	1.499	.137
Personal Feedback	.02090	.045	.191	.849
Supervisor Communication	-.111	-.069	-1.123	.264
R ²	0.836			
F	75.288*			
Sig	0.000			

* $P < 0.05$

Table 7. Result of multiple regression analysis between the knowledge creation modes and organizational creativity.

Model	B	Beta	T	Sig.
Constant	-.399		-1.835	.069
Socialization	-.179	-.062	-1.785	.077
Externalization	.082	.040	.856	.394
Combination	.362	.218	3.335*	.001
Internalization	.940	.747	13.008*	.000
R ²	0.900			
F	275.071*			
Sig	0.000			

* $P < 0.05$

The results of multiple regression analysis, regressing the four independent variables against creativity, is shown in Table (7) as it can be seen the four independent variables explained 90% of the variance in internalization ($R^2=0.900$, $F= 275.071$, $Sig=0.000$) Thus, the hypothesis that knowledge modes explain the variance in creativity was substantial.

When the Knowledge management dimensions are taken separately. Beta calculation showed that the

combination ($\beta=0.218$, $Sig<0.05$) and internalization ($\beta=0.747$, $Sig<0.05$) were significant, while the other dimensions had no direct effect.

The beta values of both of, internalization were significant.

Sixth Hypothesis

Ho₆: There is no direct effect of organizational creativity on organizational performance.

Table 8. Result of simple regression analysis between organizational creativity and organizational performance.

Model	R	R ²	T	Sig.
Creativity	.275	.075	3.192*	.000

* $P < 0.05$

The results of simple regression analysis, regressing organizational creativity against organizational performance is shown in Table (8) as it can be seen in the table, the independent variable explained 7.5% of the variance in organizational performance ($R^2=0.075$, $t= 3.192$, $Sig=0.000$). Thus, the hypothesis that organizational creativity explains the variance in organizational performance was substantial.

9. DISCUSSION OF THE RESEARCH FINDINGS

In this section, the findings of the analysis of the survey results are presented in more detail in accordance with the underlying research questions.

Knowledge conversion modes of Nonaka and Takeuchi's (1995) model which have been included in this study are socialization, externalization, combination and internalization (SECI). These are used in the

integrated research model as the factors representing the knowledge creation process. From the model presented in Figure 2, the research question asks: How does communication satisfaction as a knowledge management enabler contribute to the knowledge creation process (knowledge conversion modes)?

Of particular interest, the communication satisfaction construct contributes positively to the knowledge creation process. This result indicates that managers are important in acting as role models to exemplify the desired behavior for knowledge management. They should for example, exhibit willingness to share and offer their knowledge freely to others in the organization, to continually learn, and to search for new knowledge and ideas. It is imperative that they model their behaviors and actions through deeds, not just words. By doing so, they can further influence other employees to participate in knowledge management.

One vital characteristic of inspirational motivation management and leadership is to facilitate the development of a powerful organizational vision as well as to develop a communications strategy that affectively explains and engenders commitment, rather than just compliance to the vision's delivery. Moreover, "vision needs to be communicated early and simply, often in terms of metaphor with a powerful visual image or sensual symbol of achievement that resonates with those stakeholders required to commit to delivering these outcomes". Moreover, inspirational leaders engaged in its (vision) implementation, interact frequently with members, and become actively involved in educational programs. Senior management also send messages that organizational learning and knowledge management are critical, clarify what types of knowledge are most important and provide funding and other resources for them (Davenport *et al.*, 1998; Davenport and Prusak, 1998).

The results of multiple regression analysis, regressing the four factors of the knowledge creation against creativity show that there is a positive relationship between knowledge creation and organizational creativity. Existing knowledge has an imperative role in organisational creativity. Therefore, access to information, ideas and experience enables individuals and teams to build on good ideas and incorporate them into innovative products and process. For example, the explicit (digital) material in the company intranet and 'communities' can considerably fertilise a firm's

creativity and innovation. However, in order to act as a source of innovative ideas for a company the knowledge has to go through a screening and evaluation process. To this end, several researchers have emphasised the pivotal role of the management of knowledge, particularly creating an internal working environment that supports creativity and fosters innovation (Soderquist *et al.*, 1997).

The results of simple regression analysis, regressing organizational creativity against organizational performance show that organizational creativity affects organizational performance significantly. This finding is in line with previous studies (Shani *et al.*, 2000). For instance, (Shani *et al.*, 2000) introduced a framework, which links organizational creativity and organizational performance. Their finding implies that managers pay more attention to organizational creativity in order to improve organizational performance. Although the relationship is statistically significant, the percentage of total variation of organizational performance explained by organizational creativity is relatively low. This may reflect the creativity paradox, as follows: If creativity is encouraged and reinforced at the expense of operational behaviors, it may decrease organizational performance (Lee and Choi, 2003). Therefore, organizational creativity is valuable, but its over-encouragement may not be always useful.

Managerial Implications

The research results help managers establish strategic positions to manage knowledge effectively. According to Hansen *et al.* 1999), knowledge management can be described along two dimensions (approaches) to reflect knowledge management focus. The first dimension refers to knowledge sharing via interpersonal interaction. The second dimension refers to the capability to help create, store, share and use organization's explicitly documented knowledge. The first dimension is more affected by socialization, and the second dimension is affected by combination (Lee and Choi, 2003). Knowledge management strategies can sharpen weak knowledge management dimensions on the basis of knowledge management enabler (communication satisfaction) mentioned in this study.

Since the purpose of knowledge management and sharing is to "facilitate communication across all of the organization's boundaries, so that the entire organization works together to help everyone to be the best they can be", then knowledge managers need to look at specific

tools and tactics that will enable information sharing between employees. By facilitating all types of communication, organizations can put less focus on their knowledge stock and more emphasis on the more important element of knowledge flow (Buckman, 1998).

To generate learning, managers need to look beyond technological devices and tools that handle historical knowledge and develop systems based on fundamental aspects of communication. Corporate communications are tools used by managerial craftspeople such as carpenters use saws, planes, and hammers. Those tools are found in basic communication theory. The sender originates and transmits the message, the message is that which is being sent, the channel is the mean by which the message is sent, and the receiver is the destination of the message (Infante *et al.*, 1997). Understanding these terms and the relationship between them will help knowledge managers develop more effective knowledge sharing techniques, specifically better ways to share tacit knowledge. According to Hedlund (1994), "Any good knowledge management system must elicit knowledge from many modes, often distant from each other." For senders to elicit knowledge from receivers, they must be given access to each other. Senders and receivers must exist laterally within the corporation, not only vertically, and they must feel part of a whole rather than part of a part (Hedlund, 1994). By giving employees access to each other, rather than going through vertical channels of upper management, those with the most current information can share it with those who will benefit from it.

To give employees access to each other and to facilitate this flow of information, knowledge managers can also create tangible channels through which senders and receivers reach each other. Companies particularly larger, decentralized ones, need to physically provide channels, in many cases technological channels, through which knowledge can be shared because "the technology is what facilitates the practice of knowledge management-or at least specific aspects of it (Angus *et al.*, 1998).

Companies should "resist the urge to create a top-

down definition for the kinds of knowledge to manage and the forms it should take" (Lee and Choi, 2003). But by creating channels of communication and an environment in which knowledge can be and will be shared, senders and receivers will determine the message, and demand will determine the supply.

Research Limitations

Although it can be said that the research study findings are interesting, they still should be considered in light of the research study inherent limitations. First, this research study presents a snapshot that does not consider feedback effects, it does not show how the manager's behavior may change over time. A longitudinal study to investigate the dynamic features of knowledge management would thus, provide further robust results. Second, most of the organizations included in this study are profitable SMEs, the results may vary if the research is conducted on relatively large and profitable organizations, such as (Lee and Choi, 2003), or venture firms. Third, the research results are limited to Jordanian organizations. This also means that the results may differ if the research is conducted in another country or in another region. Therefore, the generalizability from Jordanian setting to other countries may be questionable.

Suggested Future Research

The current findings of this research study may indicate the following avenues for further research. First, an analysis of different factors such as domain knowledge or other types of knowledge creation process may lead to interesting implications. For example, an interesting candidate is Szulanski's knowledge transfer model which is made-up of four processes – initiation, implementation, map-up, and integration (Szulanski, 1996). Second, although this study shows which knowledge management enablers may enhance an organization's capability to manage knowledge effectively, the researchers still think that it is imperative to conduct empirical research that includes communication satisfaction construct and other knowledge management enablers.

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