

Using Electronic Collaborative Media in Knowledge Sharing Phases: Case Study in Jordan Hospitals

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Abstract:-Integrated groupware can assemble people of various skills around the globe to share their knowledge while working on a project. Internet, intranet, and other groupware technologies, such as Lotus-Notes, video conferencing and e-mail can be used to distribute and share individual experience and innovation throughout the organization. Therefore, Organizations especially those adapting to rapidly changing environments, face the challenge of being able to use these technologies, in order to gain knowledge sharing effectively within highly constrained timeframes. This study came to explore the effect of using electronic collaborative media on knowledge sharing phases. This study investigated a sample formed of (180) individuals operating in a number of hospitals within the Jordanian health sector; using the electronic collaborative system, to perform its different duties. In order to achieve this purpose the study proposed the following hypotheses: using of electronic collaborative media is positively influences on the knowledge sharing phases. The study concluded some important results such as that among the most important electronic collaborative media used in knowledge sharing in the hospitals subject to research are the E- mail and video conferencing, and existence of a significant effect between using the electronic collaborative media and the knowledge sharing process in the researched hospitals.

Keywords:- Collaborative platform, E-collaborative media, Groupware, Knowledge sharing, Knowledge repository.

I. Introduction

Knowledge revolution, information technology and communication led to a change in the strategic concepts and the tools used by the organizations that seek for learning, competitive and obtaining high market shares. These basic and qualitative changes imposed new concepts pushed organizations to exert efforts and make big investments in order to cope with the internal and external environmental changes.

Knowledge is one of the most important strategic resources through which the organization can develop and survive ke and Wei[18]; Al-Alawi[1]. It is the most important concept that appeared in the last century. Therefore, organizations followed two paralleled direction, the first direction represent in searching for information and knowledge in order to be capable to compete, the other direction concentrated on sharing others with the knowledge that they belong (organizations, governmental entities, or individuals). Hawryskiewicz[14] argued that Knowledge development and sharing is becoming increasingly important in many organizations. It is recognized that ways must be found to use highly specialized tacit knowledge to help create new innovative services and products to give organizations additional competitive advantage.

The quick development and changes in information technology provided many tools can be used by the organizations or their employees in order to obtain or knowledge sharing. Tools such as Electronic mail, groupware, and the other collaboration systems are considered among the most important tools, through which the organizations were able to reach advanced levels of knowledge. Bhatt [3] argued that Information system tools, including electronic discussion groups, knowledge-cafe's, and chat-rooms can open up many windows for discussion and exchange of ideas and personal experience. For example, Lotus Note applications, internet discussion groups, and chat-room experiences can support geographically distributed people in brain-storming and new idea discussion processes.

II. Electronic Collaborative Media

The new development of information technology and communications allowed the use of computers in all the fields of social-economic life, including the education field especially higher education. Paraschi[35]

Knowledge sharing through the internet between the firm, its customers, and its suppliers is important to promote the process of knowledge management Egan and kim[10]. Graveline[12] argued that people have begun to use communication technologies to collaborate at a distance, to enhance the way operation done. These technologies used to decrease costs and increase productivity and give employees greater flexibility in their work life by enhancing communications between organizations. There are a large number of tools and methodologies to facilitate e-collaboration inside and outside organizations, such as groupware tools which refer to software products that support collaboration over networks among groups of people or employees who share a common task or goal. More of these tools are available on the internet or an intranet to enhance collaboration process of people in the same place or over the world. So if any organization wants to adopt these technologies they have to prepare the infrastructure needed from hardware to groupware, such as Internet, intranet, extranet, and wireless technology. These tools provide collaboration in two types: synchronous and asynchronous mode. Turban[29]

O'Briens[26] argued that information technology playing important role in changing the way people work together. Especially internet, intranet and extranet technologies; because these technology help to achieve communication, coordination and collaboration functions. Also he categorized electronic collaboration media into three groups:

- Electronic Communication Tools: e-mail, voice mail, faxing, web publishing, internet phone.
- Electronic Conferencing Tools: data conferencing, voice conferencing, video conferencing, discussion forums, chat systems, electronic meeting system.
- Collaborative Work Management Tools: calendaring and scheduling, task and project management, workflow systems, document sharing.

Bajwa[2] named these tools as CIT (collaborative information technology) and classified them to seven clusters; in addition he lists examples for each cluster like that:

- Email like Microsoft Outlook, Hotmail.
- Teleconferencing (two-way audio) like NetMeeting, CU-SeeMe.
- Videoconferencing (two-way audio and video) like NetMeeting, CU-SeeMe.
- Data conferencing (whiteboards, application sharing, data presentations) like NetMeeting.
- Web-based Collaborative Tools (Intranets, Listservs, Newsgroups, chat, message boards).
- Electronic Meeting Systems like GroupSystems, MeetingWorks, TeamFocus.

Johansen classified these tools depending on two dimensions time/place as shown in figure (1):



Figure (1): Electronic Collaborative Media Classification.
 Source: Source: Barbra [36], Information Systems Management in Practice, Sixth Edition, Prentice Hall

As shown in figure (1) Same Time/Same Place (ST/SP) meetings take place in a meeting room with or without technology support. The Different Place modes are often referred to as distributed meetings or virtual meetings. Different Place configurations could contain group members participating from disconnect offices all over the world to members co-located in two or more face-to-face meeting rooms, or any combination thereof. Since these meetings include participants at different geographical locations, they need at a minimum some form of technology support for communication. The Same

Time/Different Place (ST/DP) mode supports synchronous interactions from multiple locations, where real time give and take, exchanging information, feedback, and/or process guidance are integral parts of the meeting process. The Different Time/Different Place (DT/DP) mode involves group members participating asynchronously or at least not necessarily at the same time such that the opportunity for real time interaction is uncertain. Thus, recording and storage are required features of the communications media applied. After we reviewed many literature's we notice that all the tools have an effects on knowledge sharing process.

The Benefits from Using Electronic Collaborative Media

There are many benefits to adopt and use of electronic collaborative media , such as Supply Chain Management, Knowledge Management, Knowledge Sharing, Information Sharing between retailer and supplier, reduction of design cycle time, reduction of product development time, collaborative commerce, brainstorming, decision support system Turban[29]. Also Hofte[15] emphasized these tools will play big roles in collaborative learning generating more of motivations, responsibility, productivity, communication skills, and skills for working as virtual teams. MATUŠŮ et al [33] argued that " The key idea of technology-enhanced learning is to support learning activities via information technology".

Related Issues of Electronic Collaborative Media

Using electronic collaborative media become wide spread among organizations, so organization faced many problems related with this developments, because many communication technology available for distributed team to use, as example on these problem is how the organization could choose the best suited option for their activities and tasks among these available media. One of the most theories related to these issues is media richness theory proposed by Daft and Lengel[9]. Theses theory defines several characteristics of media such as:

- Feedback Capability: refers to synchronous and asynchronous media, e-mail is an example on asynchronous media, and instant chat is an example on synchronous media.
- Availability of multiple cues: some of media has various numbers of communication channels like conferencing software, and single channel like e-mail.
- Language variety: the capability to use different types of language.
- Personal focus: refers to Socio-emotional content a message contains.

Also Daft and lengel [37] define two types of communication situations ambiguous and uncertain situations. From another perspective using these tools are affected by many factors. Kim and Lee [20] argued that there are many determinate factors of EDI implementation such as Organizational structural characteristics (decentralization, formalization), Technical Characteristics (technical compatibility), Managerial characteristics (education and training, top management support). Chen and Sen[38] suggested that adopting Web services applications depends on the company's current IT infrastructure status (intranet,

extranet, and Internet). Jarvenpaa and Staples[17] argued that organizational culture has an important effect on using electronic mail, World Wide Web, list serves, and other collaborative systems.

Synchronous and Asynchronous Communication

There are two types of communications that provide access to the shared space: synchronous and asynchronous communications. Company has probable to have one of them, but having both of them is advantageous because it allows users to cooperate in real-time and ability for new members to join late and review what has previously occurred. Each type has advantages and disadvantages. Synchronous collaboration is best fitting in environments where there is a need for high real-time interactions. A main problem of synchronous communication can be that the interaction is lost once completed and it need an immediate response and can disrupt work and actually cause a decrease in productivity. In contrast asynchronous collaboration is appropriate when users do not wish to interact simultaneously. It allows users to participate in the collaborative environment when it is most appropriate for them. Also asynchronous collaborative environments are also appropriate when users are geographically displaced as time zones often make it difficult to collaborate at the same time and it have ability for new members to join late and review what has previously occurred. Preston[44]

Turban[29] classified collaboration systems depending on synchronous and asynchronous communications as follow:

- Synchronous media (same time): Videoconferencing, multimedia conferencing, audio conferencing, shared whiteboard, smart whiteboard, Text chat and brainstorming.
- Asynchronous media (different time): Form discussions, e-mail, SMS Chat session logs, blogs, collaborative planning, and design tools.

Electronic Collaborative Media and knowledge sharing

Electronic collaborative media has enabled information and knowledge flows to become more fluid within and outside the organization. According to Jarvenpaa and Staples[17] Collaborative systems provide the promise of much increased information sharing within and across organizations. Such systems encourage sharing of ideas in a free-flowing manner as well as in a form of structured repositories. Those systems are used to exchange both knowledge and information. Through Internet Rogareza et al[34] argued that "communication human beings had the chance to develop their personality and to evolve based on new information discovered and collected"

Kock[21] findings that social influence such as organizational culture and others organizational context have an important effect on using collaboration technology for knowledge sharing. He argued these factors were the reasons why results in the past have been generally negative to investigate the relation between knowledge sharing and collaborative technology.

Kim and lee[19] finding that computer supported cooperative work present opportunities for knowledge sharing through solving limitations and bounded

interactions problem. Jarvenpaa and Staples[17] argued that use of collaborative electronic media for knowledge sharing affected by many factor such as organizational culture, propensity to share, task interdependence, computer comfort and Perceived characteristics of computer-based information.

III. Knowledge Sharing

In recent years share what they know becomes dominant fields of research within knowledge management. The literatures focus on why people share knowledge, or why they fail to share knowledge. Nonaka and Takeuchi[25] argued that Shared knowledge is one of the unique, valuable, and critical resources that are central to having a competitive advantage. Sharratt and Usoro[27] argued that it is difficult to maximize the value of the organization resource without adequate understanding of how to leverage and share knowledge throughout the organization. Also he suggested that knowledge-sharing lead to the creation of new knowledge while the sharing of information does not necessarily lead to the creation of new knowledge.

Gurteen[13] emphasized that today it needs to be explicitly understood that sharing knowledge is power not knowledge is power. Because knowledge is a perishable and knowledge is increasingly short lived. If you do not make use of your knowledge then it rapidly loses its value. We agree with this opinion because knowledge overload without used and evolve will be lost.

Christensen[5] defined knowledge sharing as "the process intended at exploiting existing knowledge, and knowledge sharing is, hence, defined as being about identifying existing and accessible knowledge, in order to transfer and apply this knowledge to solve specific tasks better, faster and cheaper than they would otherwise have been solved". Connelly and Kelloway[8] defined knowledge sharing is a set of behavior that involve the exchange of information or assistance to others. Lin[23] defined Knowledge sharing as "individuals sharing organizationally relevant experiences and information with one another".

Factors Contributing to Knowledge Sharing

Kim and lee[20] analyzed the influences of organizational culture, structure, and IT on employee knowledge sharing capabilities in five public and five private sector organizations in South Korea. The results suggest that organizational culture, structure, and information technology all exert significant influences on the KS capabilities of the employees of five South Korean government ministries. According to Clarke[6], technology platforms may assist in knowledge sharing process, but no technology will stimulate the flow of knowledge without attention to the cultural and organizational contexts in which people are encouraged to develop and share their knowledge.

Kim and Lee[20] stated that social networks, performance-based reward systems, and IT application utilization are all significant variables affecting knowledge sharing capabilities. Egan and Kim[10] argued that IT infrastructure provides a suitable framework for knowledge sharing. To explain his suggestion he argued that "the use of tools that foster a culture of sharing. Electronic mail facilities communication; data stores and libraries offer repositories

of shared information; and internet and intranet Web sites are used to publish and disseminate organizational information and message. All of these digital tools serve to community building and knowledge sharing “.

According to Zhang[32] there were many factors played important roles that influenced on knowledge sharing process such as: leadership, alignment of issues and incentives, coordination of a number and variety of groups, trust, technology, and implementation strategy. Staples and Jarvenpaa[17] suggests three sets of factors are influence individuals' sharing behaviors in organizations: motivating sharing via cultural norms, motivating Sharing via Individually-held Attitudes and beliefs that influence if an individual will share information, motivating Sharing by using information technology.

Based on the previous review, we classified factors that contribute to knowledge sharing into three categories, namely cultural Factors, IT Factors, and organizational Support Factors.

Knowledge Sharing Process and its Components

Magnini[24] described Knowledge as “the process by which individuals mutually exchange their knowledge and collaboratively generate new knowledge”. According Garfield[11] he describe three components to knowledge sharing are people, process and technology.

People: may be representing persons with a question, problem, or need, Community members who respond with answers and solutions and knowledge brokers who monitor discussions to ensure that answers are provided.

Process: may be representing collaboration process to support asking and answering questions, Policies and procedures for sharing knowledge and measurements and rewards for sharing knowledge.

Technology: may be representing structured repositories, Collaborative team spaces, and threaded discussion forums.

Knowledge Sharing Benefits

After we reviewed many literatures we note that participating in knowledge sharing supports many benefits for organizations. Follow we will mention some of them:

- 1- Enhancing the sharing of knowledge with our clients and partners.
- 2- Enhancing client capacity to access and make effective use of knowledge. Yang[31]
- 3- Enhancing new product development. Hong [16]
- 4- Supporting ongoing organizational activities. Christensen[5]
- 5- Increased company value. Voelpel and Han[30]
- 6- Facilitate the learning and alleviate the isolation. Coakes[7]
- 7- Improve decision making process and problem solving.
- 8- Establish common understanding between organization employees. Ke and Wei[18]

Knowledge-Sharing Strategies

Tsui et al [39] emphasized that the choice of knowledge-sharing strategies will depend upon available resources, where possible, using more than one strategy may be the

best option. Using multiple strategies may increase knowledge sharing Success. Also they categorized Knowledge sharing strategies based on delivery method: writing, speaking, and information technologies.

Writing

Writing is one of the knowledge sharing strategies based on delivery method [39]. There many benefits for using this method such as: creates permanent knowledge-sharing products, useful for years after it is written, usually available to all interested parties, allows for extensive planning and editing during the creation of documents, return to previous sections of text to clarify understanding. The weakness of this method is a written document may become out of date before it even reaches intended audiences. Some examples of written materials are handbook, research publications and technical reports, books and book chapters and newsletters.

Speaking

Spoken knowledge-sharing strategies have done through many ways such as: conferences, lectures and presentations, workshops, conversation sessions, and meetings. This method include many benefits such as bring together participants from larger geographic areas who would not have the chance to interact face-to-face with others. But also it has some of disadvantage such as costs of travel and related expenses to prepare these meeting. [39]

Online

The third strategy of knowledge sharing strategies based on delivery method which proposed by Tsui et al[39]. These strategies give a power to face-to-face interaction in knowledge sharing. However using of online communication tools for knowledge sharing requires further study of requirements and other social factors. Some examples of these types are: websites, discussion forums, and email listservs as we discussed in previous chapter.

Knowledge Sharing Practices and IT Role

Knowledge-sharing practices describe the methods and techniques that the organizations have used as part of theirs day to day operations. These practices depend on tacit oriented or explicit oriented strategies. Follow we will discuss some of these practice:

Documentation: Documented policies are very effective for transferring critical knowledge to employees, particularly providing instructions for performing repetitive tasks and duties. EDM systems provide an efficient sharing, retrieval, better security and control of these documents because EDM systems have many features, like cataloging and indexing. But EDM systems deal only with the explicit knowledge. Also there is another version of EDM named Content Management tools. These tools manage contents; instead the media documents are available in fax, e-mails, HTML forms, computer reports, paper, video, audio or spreadsheets. Carvalho and Ferreira[40]

Conferences: Conferences are usually a mix of workshops, lectures, and presentations. It takes from one to

several days in duration. Conferences often bring participants from many large geographic areas. So participants need much money for travel and related expenses. But today internet, networks, video conferencing, audio conferencing and computer conferencing contribute to conduct conferences virtually. Tsui et al [39]

Meetings: meeting or gathering of people with common interests may present opportunities for knowledge sharing. But, today Net-conferencing is used to perform the collaborative function of conferencing two or more parties working together on a particular task via the internet. Microsoft's NetMeeting is an excellent example enhance electronic meeting. Taylor[41]

Storytelling: Storytelling is a method used from experienced staff to share their knowledge in a way that aids understanding for unique situations. Storytelling is used in work group meetings, team projects or training course Sinclair[42]. We believe that all new collaborative media contributed in enhancing Storytelling method such as websites, computer conferencing and email.

Examples of Knowledge Sharing Implementations

Many companies around the world began to implement knowledge sharing through the use of Information Technology infrastructure to facilitate their business.

- British Telecommunication's global effort to expand product lines and services was hampered because all of its six industry sectors were acting as silos. Employees in one industry sector were not aware of the knowledge and expertise of employees in the other sectors. To overcome this lack of awareness, they introduced virtual communities of practice that were connected through the Knowledge Interchange Network (KIN). This increased understanding of experts via the distributed technology and improved cross-sector collaboration.
- IBM Global Services, the management consulting division of IBM, has a strategic drive to ensure that the best expertise is brought to bear on client projects. To help employees better understand "who knows what" in this complex and distributed workers, they have adopted Tacit Systems EKG profiling system. This technology actively mines e-mail (that the employees permit the system to assess) and distributed databases to classify kinds of knowledge that are being requested. Though limited to electronic communications, the system is then able to generate and make existing a profile of an employee's expertise that others in the organization can then seek out as necessary.

Knowledge sharing Phases

Blink[4] proposed the following knowledge sharing phases. Each phase reflects a particular stage in the development of knowledge sharing in an organization.

Unawareness phase: An organization does not realize the possible contribution of knowledge to its competitiveness

and Knowledge sharing is not addressed in the organizational strategy.

Knowledge repository phase: "The knowledge repository phase is applicable to organizations that have become aware of the potential value of information and knowledge. In its strategy the organization pays attention to information management and it is willing to invest in information systems".

Knowledge routemap phase: "An organization in the knowledge routemap phase realizes the benefits of knowledge and undertakes increasing effort in knowledge sharing. This phase focuses not only on sharing of explicit knowledge but also on sharing of indirect knowledge by means of knowledge".

Collaborative platform phase: "Organizations in the collaborative platform phase use knowledge to compete and to address their business drivers. The way of working is focused on participative decision-making, collaboration, and learning together (for instance in communities of practice)".

Organizational learning phase: "Learning by trial and error is sided by explicit, systematic (double loop) learning. Competitive advantages are attained through collective learning in the organization, through combination and coordination of skills, competencies and technologies.

IV. Research Model

This research aims to investigate the impact of using electronic collaborative media on knowledge sharing. Because there is scarcity of the studies related to this study in our area, we start with an exploratory phase to gain an in depth understanding of phenomenon construct and formulate the research hypotheses.

In this research, the exploratory phase starts with semi-structured interviews aiming to develop an understanding of the following issues:

- The common electronic collaborative media used to exchange knowledge inside and outside hospitals.
- The important contextual organizational factors concerned with knowledge sharing and the use electronic collaborative media in hospitals.
- To what extent has knowledge sharing been realized and actually applied in hospitals.

According to Smith [43] he argued that the use of semi-structured interviews will help researcher obtain more information, about participant's beliefs, or perception of particular phenomenon.

Depending on semi-structured interviews and literature we posed the following model:

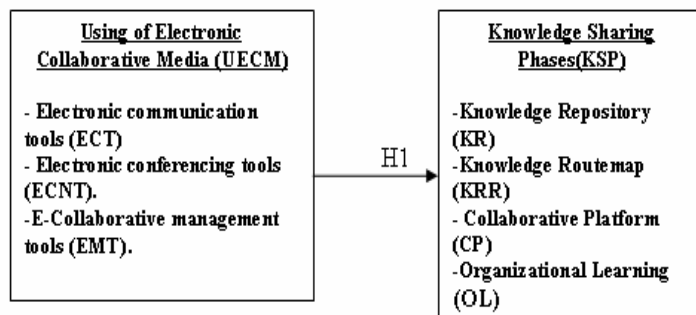


Fig (2): The suggested model of the study

To test the suggested model we posed the following hypothesize:

H0: Using of electronic collaborative media has not positive effect on knowledge sharing.

H1: Using of electronic collaborative media has positive effect on knowledge sharing.

V. Methods

Sample Selection and Survey Administration

We have chosen hospitals belonging to the Health care sector in Amman city to conduct the study for the following reasons:

- 1- The importance of the role played by researched hospitals in Jordan society.
- 2- The researched sector is the best example where the relation between study variables and research subject becomes clear.
- 3- Sincerity of researched hospitals to use modern and innovated methods in performing their works.

Therefore, the researcher has made a preliminary survey of Amman city's hospitals to determine which ones using more often the electronic collaborative tools and how they apply knowledge management concept. Through the survey a number of hospitals have been distinguished with the previous characteristics. This study aims to cover a wide variety of respondents from different hospitals located in the Amman city. These hospitals are at the heart of the health care industry in the Jordan.

Table (1): Hospital Names and Locations

No	Hospital Name	Location
1	King Hussein Military Hospital Medical Care	Amman
2	Hashemite University Hospital	Herak, Amman
3	Jordan Hospital	between 10th and 11th Circles Amman
4	Al-Jalal Hospital	Herak Amman
5	Al-Thalabi Medical Center	between 10th and 11th Circles Amman
6	Summa Hospital	Herak Amman
7	Al-Haram Hospital	Amman
8	Summa Surgical Hospital	Amman 5 th Circle
9	Specialty Hospital (University)	Herak Amman

The study sample included department directories and heads of administrative and vocational section of study community's hospitals, as well as those having information about their hospitals duties, availability of electronic collaborative tools and application aspect to manage knowledge sharing. Therefore there was a total of (210)

persons, constituting the study sample forming (43%) of the whole community which were 470 persons. There were (190) questionnaires which have been retrieved of which have been discarded because of being invalid for statistical analysis, so the real number of study sample is (180) persons constituting (37%) percent of whole community and it is acceptable in such type of this studies.

Survey Measures and Items

The self-administered questionnaire was designed to elicit demographic data and information on employee perceptions of using electronic collaborative media and knowledge sharing phases. The items used in this survey were adapted from previous studies. Responses were recorded along a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree. Cronbach alpha reliability estimates for all variables ranged from .70 ("Collaborative platform phase") to .81 ("knowledge repository phase"). According to a factor analysis, the items designed to measure electronic collaborative media variables and knowledge sharing phases loaded on seven separate factors. The factor loadings support the use of these items as indicators of the constructs they were designed to measure.

Using electronic collaborative media dimension were divided into three construct as shown in the fig(1.1) adapted from O'Briens[26]; Hofte[15].

Electronic communication tools construct was assessed with a five-item scale which was a) "The hospital use application software which allows interested employees to contribute their ideas relating to certain subject"; b) "The employees within the hospital rely on fax machine to send or receive documents"; c) " The employee rely on voice mail as a method of communication to exchange information within the hospital"; d) " The employee rely on electronic email to exchange information inside or outside the hospital"; e) "The hospital uses application software which enables publishing of information on web site." The Cronbach alpha reliability of the five items was measured as 0.79, KMO = 0.82, factor loading = 0 .74, mean = 3.5, standard deviation = 0.90.

Electronic conferencing tools construct was assessed with a six-item scale which was a) "Video conferencing is used to exchange information and special experiences related to the employee job within the hospital"; b) " The hospital provide special application software which help employees to perform shared tasks"; c) "The employee rely on the chatting software on the internet for real time exchange of information and special experience related to their job within the hospital"; d) " The hospital provide special electronic meeting technology to conduct meeting inside or outside the hospital"; e) "Electronic Bulletin Board is used to exchange information within the hospital"; f) "The employee rely on the forum available through the internet to exchange information and special experience related to their job within the hospital." The Cronbach alpha reliability of the five items was measured as 0.81, KMO = 0.824, factor loading = 0 .72, mean = 3.4, standard deviation = 0.99.

E-Collaborative management tools construct was assessed with a six-item scale which was a) "The hospital provides an extranet which enables exchange of information with other business partners"; b) " Workflow system is used within the hospital to transfer information related to task execution mechanism"; c) "Specialized computer systems are used to manage different functional activates"; d) " The hospital poses application software which include many methods to share knowledge"; e) "The hospital poses an intranet that links all of the employees within the hospital"; f) "The employees in the hospital rely on electronic memos to coordinate appointment and task scheduling related to individual." The Cronbach alpha reliability of the five items was measured as 0.75, KMO = 0.82, factor loading = 0 .69, mean = 3.3, standard deviation = 0.98.

Knowledge sharing phases dimension were dived into four construct as shown in the fig(2) adapted from Blink[4]; Laycock[22]; Hawryszkiewicz[14]; Yang[31]; Stonehouse and Pemberton[28].

Knowledge repository construct was assessed with a six-item scale which was a) " There exist specific and organized procedures to attract knowledge and store in knowledge base"; b) "There exists mechanism to categorized and classify knowledge before the storing process beings"; c) "The management of the hospital realized the worthy value of information and knowledge"; d) "The management of the hospital care for knowledge management activities and references"; e) "The storing knowledge is upgraded continuously"; f) "The management uses technology to store information and knowledge from external and internal resources." The Cronbach alpha reliability of the six items was measured as 0.81, KMO = 0.84, factor loading = 0.72, mean = 3.35, standard deviation = 0.93.

Knowledge routemap construct was assessed with a six-item scale which was a) "The management of hospital realizes the advantages of create maps which indicate the centers of special knowledge within the hospital"; b) "The hospital and its management increase effort to share knowledge"; c) "There is concentration on tacit and explicit shared knowledge at the same time"; d) "There exist directories to determine internal knowledge recourses"; e) " There exist directories to determine external knowledge recourses"; f) " There exist directories that determine the best practices and activities that must performed." The Cronbach alpha reliability of the six items was measured as 0.81, KMO = 0.83, factor loading = 0.73, mean = 3.25, standard deviation = 1.06.

Collaborative platform construct was assessed with a five-item scale which was a) "Information technology is used as bases for collaborative work within the hospital"; b) "The knowledge is used as a tool to direct different activates within the hospital"; c) "The hospital concentrate on group decision making process"; d) " There exists within the hospital data communication network to support collaboration and team work activities" e) "The hospital provide motivation to encourage collaboration team work." The Cronbach alpha reliability of the five items was measured as 0.70, KMO = 0.74, factor loading = 0.69, mean = 3.28, standard deviation = 0.74.

Organizational learning construct was assessed with a five-item scale which was a) "There exist motivations for employees who tend to learn and gain new experience"; b) " There exist systematic activities for continues learning"; c) "The management strive to develop and apply the best practices in the field of health care sector"; d) " The management of hospital tries to build communities of practice that strive to learn"; e) "The management concentrated with training employees within the hospital." The Cronbach alpha reliability of the five items was measured as 0.73, KMO = 0.72, factor loading = 0.70, mean = 3.40, standard deviation=0.96.

VI. Research findings and conclusions

Hypothesis testing results:

H0: Using of electronic collaborative media has not positive effect on knowledge sharing.

H1: Using of electronic collaborative media has positive effect on knowledge sharing.

Table (2): Multiple Regression Test

Model	1	2	3	4	5	6
Adjusted R Square	.000	.000	.000	.000	.000	.000

Predictors (constant): ECT, ECNT, EMT
 Multiple Regression Test

According to table (2) the multiple correlation coefficient R= .934 indicated that there is a strong correlation between the knowledge sharing and those predicted by the regression model, R2 = .87 which means that Using of electronic collaborative media (Electronic conferencing tools, Electronic conferencing tools, Collaborative management tools) explained 87% of variance in knowledge sharing. The adjusted R2 is an attempt at improved estimation of R2 in the population . Use of this adjusted measure leads to a revised estimate .871 of the variability in knowledge sharing can be explained by the three explanatory variables.

F value equal 402.991 with significant equal .000, therefore we reject the null hypothesis and accept the alternative which indicate that there is an effect of Using of electronic collaborative Media on knowledge sharing.

Table (2) also show that the Durbun Waston test equal 1.806 which means that there is no autocorrelation between independent variables.

Table (3) depicts which of independent variable has a significant effect on KS.

Table (3): Coefficient table

Independent Variable	Standardized Coefficient	T	Sig.	Collinearity Statistics		
	B	Beta	F	Tolerance	VIF	
ECM	.461	.461	14.287	.000	.999	1.001
ECT	.480	.480	14.555	.000	.999	1.001
ECNT	.192	.192	8.987	.000	.999	1.001

Table (3) show that there is positive relation between using electronic communication tools and knowledge sharing where Beta equal .461(T equal 14.287, Sig equal .000). There is positive relation between using electronic conferencing tools and knowledge sharing where Beta equal .480(T equal 14.555, Sig equal .000). There is positive relation between using electronic collaborative management tools and knowledge sharing where Beta equal .192(T equal 8.987, Sig equal .000).

Collinearity statistics shows that the VIF values are less than 10 and tolerance values above 0.1 so there is no collinearity between independent variable which indicates the power of study model.

Conclusion and further researcher recommendation

This study proposed that using of electronic collaborative media has positive effect on knowledge sharing. The results of the proposed examination indicated the presence of significance effect of using electronic collaborative media in knowledge sharing in the hospital under study, whereas the three dimensions of this variable (ECT, ECNT, and EMT) have a significance effect on the knowledge sharing.

These results coincide with the meetings that were held by the researcher, and with the other previous studies such as Hayes, 2000; Jarvenpaa and Staples[17]. Hayes (2000) finding that using electronic collaborative media present opportunities for knowledge sharing through solving limitations and bounded interactions problem. According to Jarvenpaa and Staples[17] Collaborative systems provide the promise of much increased information sharing within and across organizations.

This consistency between the results and literature review confirms that using of electronic collaborative media plays an important role in achieving knowledge sharing; therefore organizations must take into consideration this new technology in order to achieve a higher level of knowledge sharing. In addition, it has to prepare suitable environment for these tools.

Recommendation for electronic collaborative media

- 1- To work on reduce the gab resulted of the variance by using electronic collaborative tools that may be reduced the advantages for the hospitals to use these tools at a comprehensive and integrated aspect
- 2-To increase the use of voice mail as an electronic tool that affects to achieve the effective performance for the hospitals and individuals.
- 3-There is a necessity to follow-up the quick developments in electronic collaborative tools to provide and to use the recent tools to facilitate knowledge sharing.
- 4-There is a necessity to depend on electronic bullet board to get to the instructions and guidance at wok field for the workers in real time.
- 5-There is a necessity to develop and develop work flow systems that explained work performance stages and procedures besides the special level to achieve work and ideal performance time.

Recommendations for knowledge sharing

- 1-There is a necessity to clear up the importance of knowledge sharing with its different dimensions for the workers at hospital sector and the importance of the role that reflected on knowledge sharing on organizational and individual performance.
- 2- There is a need to set indicators and guidance that explain external knowledge sources.
- 3-There is a need to increase the reliance on teamwork method to perform the tasks and missions the make the individuals work at teamwork framework which serves the hospitals and individuals.

VII. Limitations

As with any research, this study has several limitations. A major limitation lies in the sampling frame which may not be representative at the population since copies of the questioner were distributed to the hospitals employees based on their agreement to participant in this study. In addition Due to unexpected delays in institutional approval of research with these subjects, the project started six weeks after it was originally scheduled to begin. Also, ability of scheduling personal interviews with each of the participants was very difficult; Because of the limited time available.

Another limitation observed through the study was the absence of a clear, specific definition of collaboration systems, and some aspects of knowledge sharing concept. Therefore big effort to clarify these terms was needed.

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