The use of Intranet by Omani organizations in knowledge management

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ABSTRACT

The Intranet has been used by many Omani organizations at various degrees of complexity (Low, Medium and High); however, little is known about the factors that make one organization use the Intranet on Low while others are at High. The purpose of the paper is to study the use of Intranet and examine factors that influence its use in knowledge management especially in Omani organizations. The work reported in this paper is based on survey of thirty-one Omani organizations. A model has been proposed covers many critical issues that can lead to a comprehensive understanding in implementing and using the Intranet in knowledge management.

Keyword: Internet; Intranet; Knowledge management; Information; Information Technology

INTRODUCTION

Online technology can be a great asset to any organizations for its information and communication needs. The online technologies like the internet providing easy access to information and sharing knowledge and contributing to replace faxes, phone calls, even the needs of face-to-face meetings. The intranet which provides similar services within an organization to those provided by the Internet but which is not necessarily connected to the Internet. Since about 1995, intranets have become a major growth area in corporate computing due to the availability of cheap or free commercial browser and web server software which allows them to provide a simple, uniform and users friendly interface to IS users (Hills, 2007).

Today organizations are looking towards the Intranet as a management resource (Carr and Snyder, 2007). However, its impact on knowledge management depends on many factors. The adoption of the Intranet represents a change in the way organizations manage their information and knowledge. Thus factors such as management support, training, and user participation become crucial factors in order to minimise resistance and motivate employees to use the system. Factors that influence the use of the Intranet in knowledge management are very important to researchers and practitioners, though it has received little attention. In recent years there are numerous studies are conducted on the adoption and diffusion of the Intranet in organizations. But most of these studies focused on developed economies, although organizations in developing countries have taken many steps toward the adoption and implementation of the Intranet. Literature shows that not many studies are done on organizations using Intranet in the developing countries like Oman.

The aim of this paper is to report and identify the factors which influence the use of the Intranet in knowledge management within the context of Omani organizations.

BACKGROUND TO THE STUDY

In Oman, the traditional and the preferred way of communication and knowledge sharing is face to face mode. Furthermore, the organizational hierarchical structure is characterised by its rigidity and consequently information flows from top to bottom. Most of data and information in the organizations in Oman were locked up in very thick documents and were only accessible to a limited number of people at a time in the organization and in most cases the information was not up to date (Al-Gharbi, 2001).

In Omani Organizations, according to (Al-Gharbi, 2001; Al-Harthy, 1998) the face-to-face mode of communicating and transfer of knowledge (especially the tacit knowledge) is the dominant mode between individuals. In this kind of environment resistance of the Omani business environment to the use IT to manage knowledge is anticipated. Scott (1998) has reported this kind of resistance to Internet based technology elsewhere, but the resistance is even greater in Asia than in the US or Europe due to cultural differences.

The openness of Internet based technology may raise the fear of technology, disclosing secrets and a full disclosure in business dealings (Al-Gharbi, 2001). A numbers of studies have reported many obstacles prohibiting countries like Oman, benefiting from using Internet technologies that need to be considered such as, organizational culture, awareness, education, language, social and psychological factors. Beside all these difficulties Omani organizations are embracing technology though slowly to get its benefits in their business activities.

INTRANET AND ORGANIZATIONS

The introduction of the Intranet in Oman is very recent. Most organizations are still using traditional means for managing organizational information. But it is widely used in organizations in the developed countries. Its success or failure seldom being explained by technical factors alone (Benynon-Davies, 1995; McBride,1997; Poulmenakou and Holmes, 1996). The Intranet is an extension of Internet applications and technologies and since the Internet is a part of an information system (IS), the attempt is to identify the factors that influence the use of IS in general and the Intranet in particular in knowledge management. The literature review provides a rich body of theory and evidence to help identify critical factors influence the success of IS systems in organizational context. Michael (1996) pointed out several success factors that the organizations need to pay great attention to when implementing a corporate Intranet, which include top management support, training, and security (Forouza, 2006).

Once organizations have adopted the Intranet, the level of which the information system is used must be assessed and evaluated in order to determine the benefits, the costs and most importantly what factors make one organization use of the Intranet is low, while other is high. The Gartner Group (1996) has classified the Intranet usage into three different levels based on the complexity of each level:

1   Company-wide Publishing
This is the simplest form of the Intranet usage. It is basically a one-way information flow system and it is used mostly for publishing static information. People can access the information when need and can use a search engine to access particular information (Gonzalez, 1998). This can be characterised as low level use of Intranet according to Gartner Group.

2   Interactive Collaboration

The interactive collaboration is a two-way interactive level of information flow regardless of location, time and hardware and software platforms. The interactive level extends the publishing model by adding discussion feature and newsgroup. It is used for collaboration on projects and group work. This level can be described as medium Intranet usage.

3   Interface for all Applications

This is the highest level of Intranet usage where companies can use the Intranet to provide standardised access to various applications, groups' discussions, databases and other legacy systems.

THE RESEARCH MODEL

Figure 1 shows a proposed model that contains factors, which may influence the use of the Intranet in knowledge management. The model is based on previous literature that examined factors influencing the use and the success of information technology within the organizational context. In particular the model is based on the Powell and Dent-Micallef (1997) resource-based theoretical framework, which shed some light on why some companies struggle while others flourish with the same IT. Their framework draws out some important factors, which complement IT and must be considered. Their model is based on integrating IT with other factors such as top management commitment and support, training, organizational culture among others. Furthermore, Abdul-Gader (1990; Al-Abdul-Gader and Alangari, 1994; Igbaria et al, 1997) have found that management support, training, user participation affect system success. These factors that influence the use and the success of information systems are discussed in the following sections in the context of the use of the Intranet in developing countries organizations.
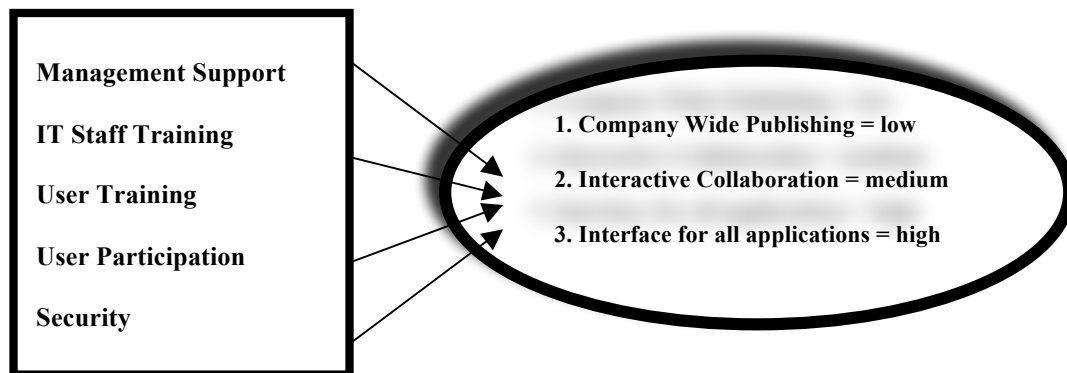
Figure 1: The research Model

Top Management Support

Literature review suggests a linkage between top management support and the success of IT systems. According to (Ernst & Young, 1998) top management support is very essential for the successful use of the IT for knowledge management programme. Similarly, Igbaria et al (1997) and Powell and Dent-Micallef (1997) have found a positive relationship between management support, the use and the success of Information Technology. Furthermore, Scott (1998) states

several reasons for the importance of top management support in order to use of the Intranet in a knowledge programme:

- Top management support is required for funds allocation to buy the necessary tools required for the Intranet implementation and maintenance.

- Top management support is needed to hire and retain technical expertise and provide training to existing employees.

- Top management creates the atmosphere for an organizational culture that explores and adopts the Intranet technology minimising resistance to change through ways and means such as incentives and reward systems.

- Top management usage of the Intranet to share information and knowledge with others is very importance to encourage other employees in using it too. Thus management can be a catalyst to change and discourage knowledge-hoarding habits.

- Top management can motivate those who are using the system and contributing to the organization knowledge financially or by other means such as better job prospects.

Therefore, it is hypothesised that:

H1: Positive relationship between top management support and the level of the Intranet usage.

User Training

User training is viewed as an important factor that influence the use and the success of IT systems by many researchers and practitioners (Al-Abdul-Gader and Alangari, 1994; Davenport and Prusak, 1998; Earl, 1994; 1996; Ernst & Young; 1998; Igbaria, 1997; Kirlidog, 1996; Meehan, 1994; Remenyi, 1996; Scott, 1998).

Earl (1998) argues that if knowledge is to be used as a basis of strategy, then users' training on how to use the technology is essential. According to Igbaria et al. (1997) without proper training employees are likely to experience problems using the system and hence lead to low use of IT systems. Therefore it is hypothesised as:

H2: Positive relationship between user training and the level of the Intranet Usage.

IT Staff Training

In addition to users' training, employees providing IT and IS services need training too. This enables them to tackle the different issues such as security, standardisation and development of advanced features for the users. This is a theme echoed by many researchers, for example Scott (1998) states "many IS developers need reskilling, training, motivation and time to gain web systems development skills". Similarly Jayasuriya (1993) and Kirlidog (1996)) reported that one of the major problem facing developing countries is the lack of qualified IS personnel and they attributed it to the inadequacy of the training.

In particular IT staff need training to gain technical skill (due to the fact that Internet technologies are new, especially in the developing countries), this might include knowledge of programming languages, operating systems, and communication protocols. Without these skills, the IT professionals cannot provide adequate services to the users. Therefore, it is expected that:

H3: Positive relationship between IT staff training and level of the Intranet usage.

User Participation

Researchers have reported a linkage between user participation and the use of IT systems. According to Lockett (1998) success of IT systems depends on bridging the gap between: Business professionals who in most cases know little about information systems and IT professionals who often lack or know little of detailed business needs.

Gonzalez (1998) asserted user's involvement in system development increase their satisfaction. To avoid implementing an Intranet for knowledge management that no one will use, it is essential to involve the users in the technology design, development and implementation Involving employees with the introduction of new system can be beneficial because it reduces uncertainty (Poulymenakou and Holmes, 1996).

The following are the main reasons for the employees' participation in the development of the Intranet:

• Reduce uncertainty and minimise confusion about the expectation from a given Intranet development activity (Gonzalez, 1998; Poulymenakou and Holmes, 1996).

• User participation is an opportunity for an ongoing feedback loop to provide information for the IT professionals which, can be used immediately or at sometime in the future. Proactive dialogs facilitate the conditions for the acceptance of new technologies (Gonzalez, 1998).

In order to motivate users and to obtain their full co-operation and support they should be involved from the beginning of the project. Therefore, it expected that:

H4: Positive relationship between user participation in the development of the Intranet applications and level of the Intranet usage.

Security of the Intranet

Security has been seen as a major sticking point in the adoption of Internet technologies within organizations. The primary concern is the outside intruder (e.g. hackers, spies, commercial competitors etc) who may connect to the Internet and try to enter the local network. This fear may lead user to hesitate using the Intranet and hence, it hypothesised that:

H5: There is a positive relationship between perceive security of the Intranet and the level of the Intranet usage.

METHODOLOGY

As the purpose of this study is to investigate the use and identify factors that influence the use of the Intranet in knowledge management in Omani business organizations. Thirty-seven business organizations that have adopted the Intranet in Oman were selected based on the following criteria:

1. The company has implemented and used the Intranet at least for three years

2. The company agrees to participate in the study.

To study the use of the Intranet by Omani organizations in knowledge management, a survey instrument in the form of questionnaire (Appendix A) was prepared with eight questions in all. The first two questions were based on size and the level of the use of intranet in the organization. The remaining six questions were based on the top management support towards the Intranet in the organization and related to users of the intranet in the organizations. These questions were based on five-point Likert scale.

Many measures for the survey were adopted from the established research rather than directly adopted. Using the three levels of the Intranet usage defined by the Gartner Group (1995) and operationalized by providing the respondents with definitions of the Intranet deployment levels, and asking them to select which level is more appropriate to their organizations.

The questionnaires were served to thirty seven IT/IS specialists working in different organizations that have adopted the Intranet in Oman and consequently have a rich experience of using the Intranet. These organizations were ranging from big with more than 1000 employees and medium with little over 100 employees. (see Appendix B). Out of these thirty seven, thirty-one questionnaires were completed and returned, representing a response rate of about 83%.

Cronback's alpha is used to determine the internal consistency of items within a scale for each question. Litwin (1995) suggest that an alpha value of 0.70 is sufficient to demonstrate a reasonable level of internal consistency. Furthermore, Nunnaly (1978) suggests that an alpha of 0.60 is sufficient for non-validated scales. Table 1 reports the reliabilities for the measurements. The reliabilities range from .94 to .70, providing a suitable internal consistency for each of the measure (Litwin, 1995; Nunnaly, 1978).

Table 1: *Reliability of measurement*

Variables	Measurement	Reliability (Cronback alpha)
Top management support	4 items for management for Intranet	.94
IT staff training	2 items on the IT/IS staff training	.92
User participation	2 Items	.80
User training	2 items on user training	.70
Intranet security	1 item	N/A

RESULTS AND ANALYSIS

The aim of the paper is to identify factors that influence the use of the Intranet in knowledge management within the Omani companies. In other word what factors make one organization's use of the Intranet high, while another is low, according to Gartner Group (1995) classification. In order to find a relationship between the independent variables and the dependent variable, the Spearman Correlation technique is considered as an appropriate method to measure the degree of correlation between two rank order variables (Gibbons, 1993; Oppenheim, 1992). Factors with >.4 correlation coefficient and at .05 significant level or lower are only considered in this work.

Statisticians considered factor that has .4 or less correlation coefficient has low correlation (Cohen and Holliday, 1982).

Table 2 shows three factors (out of five) have a correlation have met the criterion set for this paper. Management support, IT staff training, Availability of funding and user participation appear to have strong positive relationship with the level of Intranet usage. The user training and Intranet security appear to have low correlation with the Intranet usage.

Table 2: Correlation Matrix of the Variables

Variable	Y	MS	ITST	UP	FUND	UT	SEC
The Intranet Usage level (Y)	1.000						
Management Support (MS)	.802*	1.000					
IT staff training (ITST)	.834*	.456	1.000				
User participation (UP)	.705*	.342	.025	1.000			
User training (UT)	.285	.364	.131	.245	.236	1.000	
Intranet security (SEC)	.231	.227	.376	.013	.034	.015	1.000

P<.05

Management Support

Management support appears to be essential in the use of the Intranet in knowledge management. Table 2 shows that management support has a strong positive correlation coefficient of .803 with the level of the Intranet usage. The findings were statistically significant at $p < .05$.

This finding is consistent with most of the previous literature dealing with the relationship between management support and information systems implementation success. For example, Abdul-Gader (1990), Igbaria et al (1997) and Powell and Dent-Micallef (1997) have found a positive relationship between management support, the use and the success of Information Technology. Consequently any implementation of the Intranet should not be started without the approval and full support of top management.

User Training

User training has a positive relationship with the use of the Intranet, however, this relationship is not significant with p>. 05. Previous literature suggests that the Intranet is intuitive and easy to use technology (Bernard, 1998; Davenport and Prasuk, 1998; Kim, 1998; Hill, 1998; Scott, 1998). To search for information, view documents and to post to discussion groups, the Intranet user needs only little assistance because the point and click nature of the hyperlinks. This suggests that the Intranet is an easy to use technology and consequently does not require much training. Two important points need to be considered in explaining this finding:

- The Intranet user needs only little assistance because of the point and click nature of the hyperlinks to search for information, view documents and post to discussion groups.

- The awareness and the usage of the Internet (which started long before the adoption of the Intranet) means that even inexperience users of the Intranet would be familiar with the basic requirements on how to access and share information.

IT Staff Training

IT staff training appears to have a positive relationship with the level of the Intranet usage. The finding is statistically significant at p<. 001. This finding is consistent previous researchers (Jayasuriya, 1993; Kirlidog, 1996; Scott, 1998). The fact that developing countries lack of qualified and trained IS personnel to make useful and secure applications according to the user specific needs and the business requirements. Therefore it is essential for the developing countries organizations to train and develop technical staff in order to enable them to provide better services and consequently a better utilisation of the Intranet.

User Participation

User participation in the development of the Intranet applications appears to have significant impact on the use of the Intranet. The result is statistically significant at p<.001. User participation in the Intranet applications development is a great opportunity to close the gap between IT professionals who know little about business needs and the users who know little about information technology. According to Lockett (1998) success of information systems depend on bridging the gap between business professionals and IT professionals. This result is consistent with previous suggestions and findings. In particular (Gonzalez, 1998) states that to avoid implementing an Intranet for knowledge management no one will use, it is essential to involve the users in the technology design, development and implementation.

Security of the Intranet

Surprisingly the security of the Intranet has little significant impact on the use of the Intranet. It has a positive relationship, however this correlation is not statistically significant with p>.05. This result is in line with previous researchers who state that with the firewall, the Intranet has adequate security (Blackwell, 1998; Gonzalez, 1998; Went, 1998).

SUMMARY AND DISCUSSIONS

From the correlation analysis the conclusion is that three factors (out of five) are correlated to the Intranet usage level discussed in this research. However, these correlations do not show the explanatory power of the factors. In other word how much the level of the Intranet usage (Low to High) explained by the factors investigated in this research. In order to address this question, multiple regression technique was carried out. Factors that have a positive correlation with the use of the Intranet and statistically significant (=<.05) were included in the multiple regression model. Three potential factors were identified from table 2 (Management Support, IT Staff Training and User Participation) for the inclusion in the model. Table 3 shows the result of regression analysis when the factors were entered in the model.
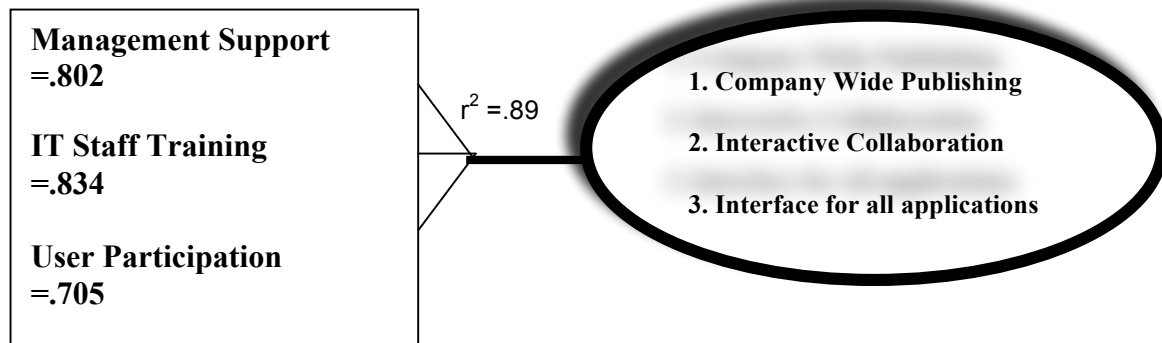
Table 3: The result of the regression analysis

Equation number:3 Management Support + IT Training + User participation * The Use of the Intranet	
Dependent variable.. The Use of the Intranet	
Multiple R	.94183
R Square	.88705
Adjusted R Square	.87000
Standard Error	.24964

The results suggest that 89% of the variations in the three levels of the Intranet usage (Low, Medium and High) are due to the presence or absence of the discussed factors. The remaining variance is due to other factors not included in the model or to random variance (or error). Therefore, great attention should be given to the factors discussed in the study.

These results provide initial support for a comprehensive understanding in using the Intranet in knowledge management. Consolidated view that not only describes the situation but also provides a prescription model that can guide the organizations in implementation and using the Intranet successfully. The successful implementation of the Intranet in knowledge management requires additional consideration of human factors.

The empirical findings suggest buying hardware and software is not enough. Knowledge management is a complex process that requires a combination of technology and other factors (human and organizational). This empirical finding is consistence with the previous findings. In particular, Earl (1994; 1998) asserts that knowledge management requires a combination of technology and social action; Powell and Dent-Micallef (1997) resource-based theory which are based on integrating IT with other factors such as top management commitment and support, training, organizational culture among others. Furthermore, Abdul-Gader (1990) and Igbaria et al (1997) have found that management support and training affect system success.

Management Support =.802

IT Staff Training =.834

User Participation =.705

r^2 =.89

1. **Company Wide Publishing**

2. **Interactive Collaboration**

3. **Interface for all applications**

Figure 2: Revised Model

The Intranet is predominantly used in a social organization context; therefore, its success or failure is dependent on the dynamic environment of the organization within which it exists. Consequently an Information Technology (IT) system that is successful in one company may be unsuccessful in another organization. According to (Benynon-Davies, 1995; McBride, 1997; Poulmenakou and Holmes, 1996) this cannot be explained by technical factors alone. Al-Abdul-Gader and Alangari (1994) attributed the failure (or little utilisation) of IT systems in the developing countries to the following factors:

• Lack or little top management support for IT;

• Inadequate IT training;

• Lack or little user participation in IT applications development.

Al-Abdul-Gader and Alangari findings also suggest that the consideration of these factors may help organizations in Oman to better utilisation and high-level usage of IT systems.

CONCLUSION

The intranet has been used by many Omani organizations for their knowledge management needs. But very little is known about the factors that influence the use of intranet. This study has indicated the factors that influence the use of the Intranet in knowledge management in the developing countries like Oman. Five variables were hypothesised to correlate with the use of the Intranet. Two factors like User Training and Intranet Security failed to demonstrate a significant relationship with the use of the Intranet. The factors which influence the use of intranet in the organizations are the top management support for IT, IT training and user participation in IT applications development. IT training appears to have the highest significant impact on the use of the Intranet to build reliable, secure, and important applications, which satisfy users and business requirements.

The model presented is calling for consolidated approach, which includes technology and the considerations of these factors necessary in the successful implementation and use of the technology in the Omani organizations. This balanced approach model can be used as a guideline for organizations in other developing countries in utilising the Intranet technology in the area of knowledge management. These findings present a challenge to those IT professionals hoping to introduce new technologies without much consideration to the above factors.

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Appendix – A

Questionnaire

Background information

Name of the organization:_____

Type of the organization: 1-Public   2- Private

Position of the respondent:_____

Questions
1- Approximately what is your organization size?
       1- Small- less than 100 employees
       2- Medium -100 to 999 employees
       3- Large- more than 1000 employees

2- What is the level of the Intranet usage in your organization?
       1- A- Company Wide Publishing
       2- B- Interactive Collaboration
       3- C- Interface for all applications

3- Top management Support in my organization is good
     A- Strongly disagree B- Disagree C- Neutral   D- Agree   E- Strongly agree

4- Top management support us to get all the resources needed for the implementation ,deployment and integration of the Intranet
     A- Strongly disagree B- Disagree C- Neutral   D- Agree   E- Strongly agree

5- Top management consider the Intranet is critical for our organization success
     A- Strongly disagree B- Disagree C- Neutral   D- Agree   E- Strongly agree

6- Users were participated in the decision, implementation, deployment and integration of the Intranet
     A- Strongly disagree B- Disagree C- Neutral   D- Agree   E- Strongly agree

7- Users were given enough training to use the Intranet
     A- Strongly disagree B- Disagree C- Neutral   D- Agree   E- Strongly agree

8- IT staff were given enough training implementation, deployment and integration of the Intranet
     A- Strongly disagree B- Disagree C- Neutral   D- Agree   E- Strongly agree

Appendix – B

Characteristic of the surveyed organization	Type of organization	Number
Large (1000 or more employees)	Oil Companies, Airlines, Insurance Companies, Banks	20
Medium (100 or more employees)	Food stuff, Industries, Computers	11

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