

Critical Factors of Knowledge Management and the Delivery of Information Services in Academic Libraries in Yemen

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Abstract— This study investigates the knowledge management perception of the Yemeni academic libraries by librarians and the factors that contribute to improve the delivery of information services. As the scope of the knowledge management is wide, this study was confined only to the knowledge creation and sharing processes of knowledge management. Data were collected from 289 librarians of twenty-nine libraries in the Yemeni universities using self-administered questionnaires and were analyzed using the Social Sciences Statistical Package (SPSS) and Structural Equation Modeling (SEM). The study found that the positive effective of knowledge sharing on the improvement in the delivery of information services indicates a good atmosphere of confidence and mutual relationship. Also, the results showed that the positive effect between knowledge creation process and knowledge sharing process on librarians' attitude indicates their concern of their status and image. Furthermore, the study found that the high level of confidence of librarians that their expertise will only be used properly and for the benefit of each other. It also indicates that they can depend on each other when they are looking for new knowledge or need help. In terms of the theoretical contribution, the study integrates both knowledge management processes and organizational climate perspectives to develop a theoretical model that explain the concept of the improvement in the delivery of information services. From the practical contribution perspective, fills the gab in literature on knowledge management process particularly in academic institution in Yemen.

Keywords— Management Support, ICT Use, Librarian Skills, Trusted Employees, Knowledge Management, Information Services.

I. INTRODUCTION

In the Arab world, the concept and/or practice of knowledge management is relatively a new phenomenon [1]. However, the importance and the processes of the knowledge management activities are beginning to attract attention in Arab countries, including Yemen [2]. Nevertheless, only information professionals, researchers, and managers were familiar with the practice of knowledge management and the importance of its sharing.

In fact, people use the term knowledge management interchangeably with information management believing that it connotes the same concept [3]. Al-Sabagh [4] discussed the important role knowledge management can play in building an information society in the Arab world. They explained the benefits of knowledge management, and how managers can build a knowledge sharing culture using the sources of knowledge in the organizations to create, exchange, and utilize knowledge. As a result, organizations can achieve success and sustainability, which would eventually lead to knowledge-based society.

Biyyautane and Al-Yahya [5] examined the implementation of knowledge management practices in government's organizations in Dubai, and they identified that employees were not fully aware of the knowledge management practice, and the critical role it plays in the development and sustainability of organizations which are considered barriers. The study also found that organizational culture and lack of trust were equally barriers to effective knowledge management.

Al-Rawi [2] investigated knowledge management resources for employees in an organization United Arab Emirates that involve the utilization of technology to their best advantage. He concluded that knowledge management practices might be introduced and/or embraced by the organizational structures. He believes that building the knowledge management system for employees will greatly enhance their capacity to contribute to it, and/or share their

knowledge.

II. LITERATURE REVIEW

A. Knowledge Management in the Arab World

With regards to the benefits of knowledge management for organizations, Al-Athari and Zairi [6] examined the availability of knowledge management systems in Kuwaiti organizations and the methods of improving them to achieve organizational objectives. They found that knowledge management is a key ingredient for the development of an organization, and that both human resources and organizational-based knowledge were the main sources of ideas for knowledge management practices.

In addition, the most important methods identified to improve knowledge management system were enhancing employees' knowledge capacity and creating teamwork environment. Al-Shammari [7] developed a knowledge management strategic framework for implementation in the Arab socio-cultural context. He proposed a three-layer knowledge management framework. They are (i) knowledge management drivers, (ii) knowledge management processes and (iii) knowledge management enablers.

Razouqi [8] discussed the importance of knowledge management in Saudi Arabia and the role of knowledge employees in a knowledge-based society. He further emphasized on the skills of knowledge employees. Siddique [9] explored the level of knowledge management applications and its initiatives in the United Arab Emirates' business organizations. He found that knowledge management practices were gradually implemented, and that several organizations had several knowledge management initiatives that focused on explicit knowledge management, and they largely invested in ICT infrastructure.

B. Knowledge Management in Yemen's Academic Library

An academic library is an agency of educational institution that provides sources of academic references for all disciplines. Academic library is a repository of knowledge within the academic community, and thus the continuous dynamic development in librarianship is necessary for knowledge to flourish [4]. Therefore, to sustain and to keep abreast with the continuous changes in information environment, academic libraries must become flexible organizations to adapt the new reality [10]. Libraries must create a climate that fosters implementation of knowledge management; this includes the establishment of strategies to move the process forward with proactive responses to changes in the sector.

Since the success of the library depends mainly on qualified librarians, thus, the training of librarians becomes extremely necessary to develop their skills and knowledge to survive and compete [11]. It is reported that in order to remain viable over time in this rapidly changing information environment, all organizations, whether public or private, small, or large, profit or non-profit, and regardless of their location and/or activities, must embrace in knowledge management practices [12].

Moreover, the rapid changes in the economic and social environment in the world have significant impact on the library services. This is because the philosophy of librarianship is to provide services and/or materials that are relevant to the needs of the users. To this end, professional librarians will continue to struggle in the collection and organization of printed and other forms of recorded knowledge materials to satisfy both the present and the future users of library services [13].

C. Delivery of information services in library

Rapid changes in the economic and social environment have had a major impact on library services. The philosophy of librarianship is based on the concept of a library service and provision of relevant materials for users.

To this end, professional librarians continue to struggle with collection and organization of printed and other forms of recorded knowledge materials in order to satisfy both present and future users [14-15]. According to Zhou et al. [16] the effectiveness of a library as an institution of learning is determined by the success with which it can provide its users with the information they seek.

The library can only fulfill its function best by pursuing a policy of constant self-evaluation in order to be alert to the changing needs of its users [17-18]. The information service includes books and information as well as advice and assistance the librarians need to provide the users [19].

Regina and Tunc [20] argued that a library should involve the librarians in creating the service mission statement. The frontline librarians have the most direct contact with the users.

D. Organizational Climate in the Library

There are several other factors that can motivate library staff to establish a formal and systematic management of knowledge. They include the desire or need to: get a better insight on how the library works in reducing the time and effort spent to search for information and documents; and to avoid the repetition of errors and unnecessary duplication of work [20-21]; and reduce the response time to questions that are asked frequently. Thus, improving on the quality of services and speed of making important decisions [22-23-24].

The library needs to do four things to apply knowledge management; it must establish as a strategy for developing both library and users. (i) top management support, (ii) ICT use, (iii) skilled- librarians and (iv) trusted employees.

Bolisani and Bratianu [25] affirmed that in order to remain viable and competitive over a long period of time in this new era of technologies, a library must fulfill five conditions that apply knowledge management that is a must for the survival of any library. Such conditions shall be as follows (i) a library should have a strong top management support, (ii) capable of guiding the library beyond short-term performance, (iii) towards sustainable development, (iv) recognize the value of each of its corporate resources, and (v) manage these resources at strategic level in an integrated way to create and/or develop the human capital [26-27].

This would create a close and strong relationship between users and technologies to ensure the level of performance needed for current and future requirements; and avoid being isolated and heading towards an external environment [28].

E. Objectives:

The study attempts to achieve the following objectives:

- (i) To investigate the relationship between top management support factor and knowledge management to deliver the information services among staff in the studied academic libraries.
- (ii) To investigate the relationship between librarian skills factor and knowledge management to deliver the information services among staff in the studied academic libraries.
- (iii) To investigate the relationship between ICT, use factor and knowledge management to deliver the information services among staff in the studied academic libraries.
- (iv) To investigate the relationship between trusted employees' factor and knowledge management to deliver the information services among staff in the studied academic libraries.

III. METHODOLOGY

For this study, the researcher decided to use the quantitative method after considering all related factors. The data were collected using survey questionnaire, which was sent directly to the academic libraries at the universities concerned for their participation in the survey.

This was to ensure a response rate of 85% with 289 librarians from those universities. The targeted population in this research is librarians working in the 29-targeted universities and the sample size composed of 340 respondents.

The sampling technique used is the simple random sampling as the most appropriate one to obtain unbiased sample. The analysis process included using the SPSS to analyze the descriptive and inferential statistics, and the SEM to analyze the measurement and structural model.

IV. DATA ANALYSIS

This study attempts to examine the influence and support of the critical factors (top management support; ICT, use; librarian skills and trusted employees) of knowledge management and the delivery of information services among staff in academic libraries in Yemen. The researcher adopted the TPB theory as research models of Ajzen [29], which explain that intention leads to behaviours. The model was conceptualized based on the studies of Lee and Choi [30] and Choi et al. [31]. Figure 1.1 shows the developed conceptual framework of the research indicating the independent variables (IVs) which are the organizational climate, including: top management support, ICT use, librarian's skills

and trust employees, dependent variables (DVs) that are the delivery of information services in library, and mediating variables (MVs) which are the knowledge management processes (knowledge creation and knowledge sharing).

A. Factor Loading

Factor loading is basically the correlation coefficient for the variable and factor.

(i) *Factor Loading of Organizational Climate*

Factor 1 comprises four items ICT35- ICT38 with loads ranging from .789 to .883 and was labeled ICT. Factor 2 comprises three items (TE45-TE47) with loads ranging (.813 - .912) and was labeled Trust Employees (TE). Factor 3 comprises three items (TES32-TES34) with loads ranging (.831 - .936) and was labeled Top Management Support (TMS). Factor 4 comprises three items (LS39-LS41) with loads ranging (.811 - .930) and was labeled Librarian Skills (LS). Factor 5 comprises three items (TM49-TM51) with loads ranging (.837 - .905).

Table 1 Summary of Items Loadings for Organizational Climate

	Component				
	1	2	3	4	5
ICT37	.883				
ICT36	.881				
ICT35	.796				
ICT38	.789				
TE46		.912			
TE45		.864			
TE47		.813			
LS44					
TMS33			.936		
TMS32			.925		
TMS34			.831		
LS40				.930	
LS39				.878	
LS41				.811	
TE50					.905
TE51					.871
TE49					.837

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

The factor analysis for all variables indicated that 5 factors with a value greater than 1. They are factor 1 ICT, use including 4 items (ICT35- ICT38), factor 2 Trust Employees consisting of 3 items (TE45- TE47), factor 3 top management support including 3 items (TMS32 – TMS34), factor 4 librarian skills containing 3 items (LS39- LS41), and factor 5 involving 3 items (TE49- TE51). In this research, based on the proposed research model and literature review, 17 items were extracted. It has dropped several items which are (LS42- LS43) and (TE48) because they have cross loading.

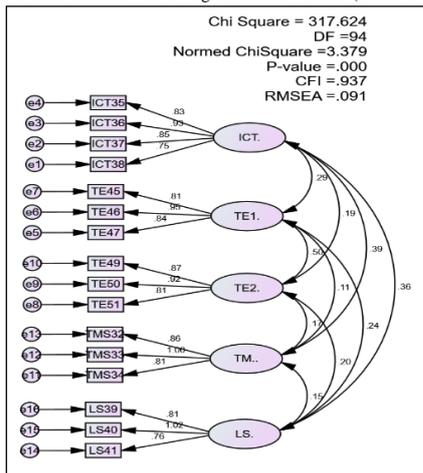
B. Confirmatory Factor Analysis (CFA) of Organizational Climate

(i) *First Order Model of Organizational Climate (Base Model)*

From the below shows Figure 2 the results of the measurement model (Base Model) for organizational climate indicate that the model fit indices such as CFI good fit RMSEA= .091 and CFI=.937. The basic measurement model for OC not fit. Since the fit indices' values were not bad, as suggested by Bentler [32] a series of modifications to the measurement model were made in order to improve the fit of model. Modification Indices MI are the total number of items χ^2 and MI has shown a high degree of

covariance between the items. The researcher found that certain covariance values between certain error terms are high. Additional error correlation based on the MI was created to improve the model fit for measurement model. In addition, if there was a high MI between the items and their loading was low, these items would become candidates for deletion to improve the model fit. Therefore, the next step was to revise and improve these fitness indices in order to improve the basic fitness measurement model for first and second order organizational climate, excluding certain items with low factor loading and high error using MI to achieve Goodness-of-Fit. The final OC measurement model consists of 16 which have been retained for subsequent analysis. As shown in Figure 1.2, all items are loaded at more than 0.50 and ranged from 76 to 100.

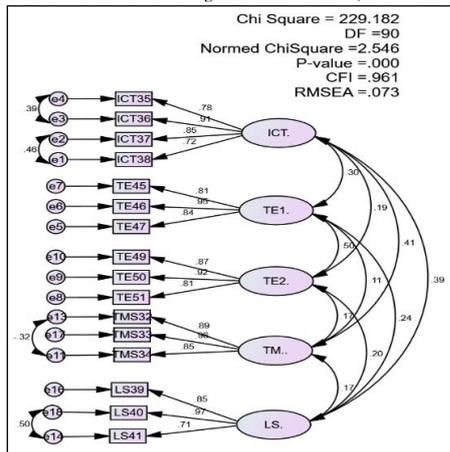
Figure 1 First Order Model of Organizational Climate (Base Model)



(ii) First Order Model of Organizational Climate (Revised Model)

The results of the revised first order organizational climate measurement model show the fitness indices of the model, such as normed χ^2 value were 2.546 less than 5 indicates enough fit. Moreover, CFI= 0.961 that explains that the model employed in this research was a good fit to data. In addition, the RMSEA parsimonious index becomes the better measurement. The results show that RMSEA = .073 Figure 3 below shows the results of the revised GFI model of organizational climate (First Order).

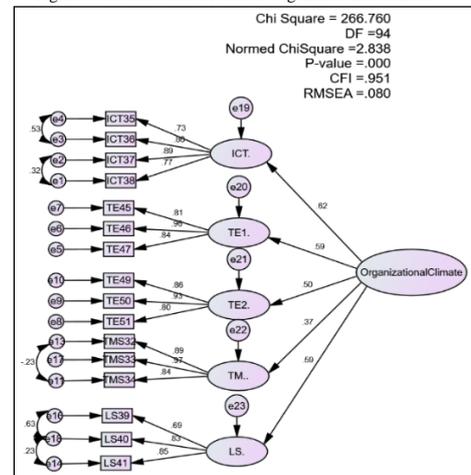
Figure 2 First Order Model of Organizational Climate (Revised model)



(iii) Second Order Model of Organizational Climate (Revised Model)

The results of the revised second order organizational climate measurement model show the fitness indices of the model, such as the normed χ^2 value was 2.838 less than 5 indicates enough fit. In addition, CFI= .951 explains that the model employed in this research was a good fit for data. In addition, the RMSEA parsimonious index is a better measurement. The results indicate that RMSEA = .080

Figure 3 Second Order Model of Organizational Climate



C. Internal Consistency Reliability

The internal consistency reliability of the measurement model is evaluated using Cronbach's alpha and composite reliability (CR). While Henseler et al. [33] and Kim and Cha [34] suggest using CR rather than Cronbach's Alpha to measure internal consistency reliability because it is more effective and reliable. Hair et al. [35] and Malhotra and Brik [36] stress the use of both "Cronbach's alpha as the lower bound of the internal consistency reliability and composite reliability as the upper bound for the true reliability". For the measurement model to have satisfactory internal consistency reliability, the Cronbach's alpha and composite reliability of each construct should exceed the recommended value of 0.70 [35]. However, proposed that CR values above 0.8 or 0.9 be used to consider internal consistency reliability and research in general to be satisfactory [33]. Table 2 shows the Cronbach's alpha and CR values of each construct.

Table 2 Composite Reliability and Cronbach's Alpha

Construct	Composite Reliability	Cronbach's alpha
Top management support	0.926	0.923
ICT, use	0.938	0.903
Librarian's skill	0.833	0.833
Trust employees	0.860	0.895
Knowledge creation	0.898	0.894
Knowledge sharing	0.847	0.856
Delivery of Information Services	0.836	0.867

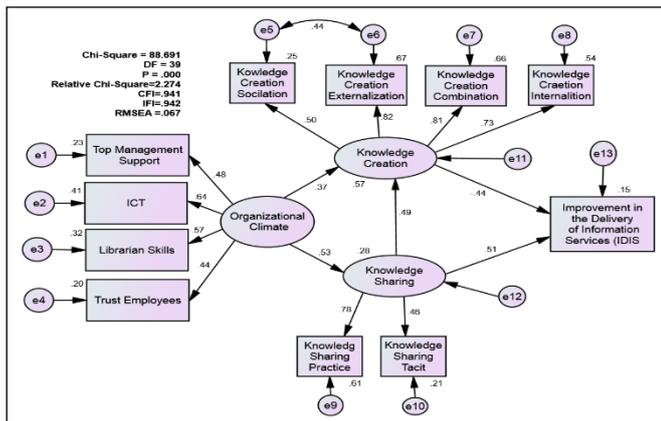
As shown in Table 1.2, the CR values ranged from 0.833 to 0.938, while Cronbach's alpha values ranged from 0.833 to 0.923. All values are above the recommended threshold of 0.70. The comparison of CR values with Cronbach's alpha values also shows that the CR is indeed a stronger measuring criterion for determining the internal consistency reliability. Based on the results of Cronbach's alpha and CR, the indicators used to

measure the constructs in this research have a satisfactory internal consistency reliability.

D. ASSESSMENT OF STRUCTURAL MODEL

The structural model consists of constructs, also known as latent variables, and the paths that connect them together, as shown in Figure 5. The structural model assessment specifies the relationship between the latent variables [33]. The purpose of the structural model assessment is to determine its validity [37] and path estimates [33] and thus test the suggested hypotheses [38]. The results of analyzing of the structural model showed an adequate and valid model. The R² values for knowledge sharing and the improvement of delivery of information services have been shown to be explanatory. Path coefficients showed significant levels at t-statistics values of 0.05 and 0.01 based on the path coefficient assessment.

Figure 4: The Structural Model



E. HYPOTHESES TESTING

Table 3 shows the results of hypothesis testing in this study. All the result shows a positive significant relationship between the top management support, ICT use, trusted employees and librarian skills factor and knowledge management to deliver of information services in academic libraries in Yemen.

Table 3 Results for Hypothesis Testing

No	Hypothesis	Result
1	There is a positive relationship between top management support factor and knowledge management to deliver the information services among staff in the studied academic libraries.	Supported
2	There is a positive relationship between ICT use factor and knowledge management to deliver the information services among staff in the studied academic libraries.	Supported
3	There is a positive relationship between trusted employees' factor and knowledge management to deliver the information services among staff in the studied academic libraries.	Supported
4	There is a positive relationship between librarian skills factor and knowledge management to deliver the information services among staff in the studied academic libraries.	Supported

Generally, it can be concluded that information services would be higher if the practice perceives increased ICT use and librarian skills among them. If librarians believe that their colleagues are reliable, and they treat others reciprocally, besides developing their skills more such as opportunities for formal and informal training in the form of community gatherings and self-development programs etc., then information services would be higher as well.

V. DISCUSSION OF RESULTS

In terms of relationship, there are modest positive relationships between information services and ICT use and librarian skills, while there are low positive relationships between information services and trusted employees and top management support. Communication skills therefore play an important role in the interaction and sharing of knowledge between individuals [39].

Good communication skills not only help to effectively transfer knowledge to others, but also help the receiver to understand and absorb new knowledge [40]. Careful transmission and absorption by the sender and receiver are therefore important for knowledge sharing to be successful [41]. In addition, good communication skills eliminate the social distance between the sender and the receiver, and ultimately facilitate the creation of a friendly environment and stable cooperation [42].

The effect of librarian skills in Yemeni academic libraries on the attitude towards knowledge sharing indicate that there is mutual understanding and confidence in each other's good wills and abilities that have helped librarians build strong relationships. Library skills in Yemeni academic libraries usually grow based on social interactions and shared relationships between individuals. As a result, librarians have developed a state of librarian skills and confidence. Wherever there are librarian skills, individuals are willing not only to talk and listen to each other, but also to exchange and share ideas, information, knowledge, and experience with each other.

Moreover, this demonstrates the high level of confidence of librarians that their expertise will only be used properly and for the benefit of each other. It also indicates that they can depend on each other when they are looking for new knowledge or need help. Likewise, top management support for organizational climate, for example, managers providing necessary help and resources, and librarians ensuring the involvement of the practices in the knowledge management processes, would also increase the information services of the Yemeni academic libraries. The effect of librarian skills in Yemeni academic libraries on the attitude towards knowledge sharing indicate that there is mutual understanding and confidence in each other's good wills and abilities that have helped librarians build strong relationships. Librarian's skills in Yemeni academic libraries usually grow based on social interactions and shared relationships between individuals.

As a result, librarians have developed a state of librarian skills and confidence. Wherever there are librarian skills, individuals are willing not only to talk and listen to each other, but also to exchange and share ideas, information, knowledge, and experience with each other. Moreover, this demonstrates the high level of confidence of librarians that their expertise will only be used properly and for the benefit of each other. It also indicates that they can depend on each other when they are looking for new knowledge or need help. Based on the theory of planned behavior, the research has theorized that knowledge sharing in libraries is affected by the intention to share knowledge as a key predictor of actual behavior. An important predictor of knowledge sharing was defined as theorized intention to share knowledge.

Yemeni academic librarians have low proper communication skills to help them participate in verbal and

written discussions. They also seem to have trouble to communicate or exchange their knowledge. In addition, the result indicates that there is a lack of contact between those librarians who possess useful knowledge and expertise and those who try to learn and acquire new knowledge to develop their own expertise.

It is worth noting that the lack of communication skills and contact between librarians is becoming very serious when it comes to sharing tacit knowledge. This barrier prevents the transfer of tacit knowledge from senior academics to new or other librarians and may lead to the loss of that expertise when they retire.

VI. CONCLUSION

This paper found that trust is associated with the knowledge management process in Yemeni academic libraries. The trust will reduce the fear about each other, increase openness towards one another and develop a shared understanding among them. Moreover, managers should offer programmers librarians' trust. Furthermore, managers should attempt to create better trusting relationships among employees by facilitating norm of reciprocity, sharing experiences, dialoguing in the library [43].

ICT and knowledge management are highly interrelated, as well as providing enough ICT facilities and support, and are now inevitable to be involved in the knowledge management process. In addition, this study demonstrates the positive and significant relationship between the implementation of knowledge management process and the use of ICT and support for sharing. Furthermore, when providing facilities and support for ICT related matters, managers should ensure that ICT is widely used, and in knowledge management process related matters, using Yemeni academic libraries.

Managers should provide enough support and training to the implementation in libraries and informed librarians about how the knowledge management process would fit their role, how it would help them build a connection between their work and the knowledge management process.

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