Subject Review: Effects of scientific Information Sharing elements in computer science Educational Institutions

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Abstract- Information sharing is the process of transferring skills and experience. Computer science educational institutions have experienced few problems that lead to a reduction in the Information sharing. Thus, the presented study aims to find solutions for Information sharing with the review of factors that affect the Information sharing in the sector of higher-education in Iraq. With regard to this study, some elements affecting the exchange of information will be analyzed in computer science Educational Institutions. It has indicates that to improve the level of Information sharing between researchers, also the staff within higher-education sector universities must handle independent elements (Normative beliefs on information sharing, Autonomy, Technology platform and Attitudes towards information sharing).

Keywords- Normative beliefs on information sharing, Autonomy, Technology platform, Attitudes towards information sharing

I. INTRODUCTION

Iraq is a country that is located in Middle Southwest of Asia, the population of the country is approximately thirty million. In the year 2003, the higher-education sector in Iraq faced extreme damage because of the war, 101 college building and 61 universities have been robbed and damaged, also the higher education sector faced huge destruction with regard to expansion, strategy, rules, growth as well as overall management regarding the higher education sector. With regard to the leadership style in the educational institutions, indicated that the transformational leadership styles are of high importance in encouraging staffs, trust building and inculcating preferences and values related to the institutional culture within the staffs with the intention of work up to mark and achieving the anticipated results. Transformational leadership is considered to be of high importance in institutional change [1].

The already-mentioned issues are some of the problems which have been encountered via the Iraqi HEIs. Such problems are difficult to overcome by initiative of HEIs as well as providing their institutions with extreme focus and achieving certain institutional innovations that are required for redeveloping the damaged higher education system in Iraq. Iraq had one of the major developing systems of higher education in the Arabic world in the years from (1950-1990). In 1991, Iraq faced some economic sanctions forced via United Nations Security Council following the invasion of Iraq to Kuwait. Such sanctions were enforced from the year 1991 until middle of 2003. The higher education sector in Iraq was damaged via these economic sanctions resulting in damaging the infrastructure and IT sector as well as reducing the support for higher-education academic community. As well as other things, substantial portion of universities, for instance, Computer science Educational Institution of Mustansiriyah has been looted via general population. Such assents and 3 years of wars isolated Iraq from worldwide improvements, particularly innovation and science and hindered general development ability of Iraqi HEIs [2].

At the same time, there is an urge to treat the Information as essential resource for institutions. Progressively, Information identified as an asset of high importance, especially, in up-to-date institutions. A computer science Educational Institution are considered as Information-intensive environment, also it is of high importance in sharing Information. A lot of studies have discussed and examined the significance of Information sharing. For example, it must be noted that Information sharing is of high importance field which should be considered in Information management domain, therefore, the Information management efficient plans must use Information sharing for maximizing the advantages which might be gained by the institution. Furthermore, Information sharing is vital for institutions for surviving and succeeding including the academic institutions. Success might be signified via obtaining new benefits and enhancing the performance. With regard to many institutions, Information is of high importance since it improves he workers' quality in addition to enhancing operational efficiency [1].

With regard to academic environments, especially, in universities, Information sharing is a component of high importance, due to the fact that all the staff regularly handle the Information. Based on (Fullwood) previous studies on the exchange of Information between universities are limited. However, Information is difficult to be shared because it is the outcome of understanding and analysis of information and therefore, there are many difficulties in the exchange of Information in the sector of higher-education. The quality levels within researchers is one of the problems, particularly in private and public universities. The institution of higher education in UK is encountering an obstacle of Information sharing within the scientific researches for the purpose of creating new Information. Such institutions are developed for improving Information, due to the fact that they are impacted by barriers, individual viewpoints and structures organizational barriers. The presented study has the aim of increasing the interaction between researchers that is referred to as exchange of Information for the purpose of promoting scientific research in Iraq. There is a necessity for implementing Information sharing for supporting the improvements in scientific research implementation [2].

In order to resolve the issues and improve the situation, there is a need for scientific research in the higher-education sector of Iraq. Especially, Computer science Educational Institutions. This study suggests that sharing of Information in educational institutions can increase the quality of scientific research. The Computer Science Educational Institution is facing some problems whereby the sharing of Information can be a solution to these problems through the sharing of large numbers of information and Information between researchers at the Computer science Educational Institution to support new scientific researchers [3].

Sharing Information has been measured with 6-item scale created via (Noor and Salim), the 6-items were "The Information shared by team members in the discussion board is relevant to the topic," "The Information shared by team members in the discussion board is accurate" and "The Information shared by team members in the discussion board is reliable".

A. **Normative beliefs on information sharing:** A Normative belief on information sharing was measured with 3-item scale created via (Yassin et al.). The 3-items have been "Based on the definition given, I understand the meaning of Information management," and "Based on the definition given, I understand the meaning of Information sharing" [3].

B. **Autonomy**: Autonomy was measured with 3-item scale created via (Yassin et al.). The 3-items were "I fully trust expertise that my colleagues have," and "I believe that my colleagues will not exploit for their own interest" [4].

C. **Technology platform:** Technology platform was measured with 3-item scale created via ("Yassin et al."). The 3-items have been "I am an extrovert type of person (like to know what is happening, socialize and open-minded)," and "I am always cautious (R)" [5].

D. **Attitudes towards information sharing:** Technology capability was measured with 4-item scale created via ("Ryu et al."). The 4-items have been "Information Technology facilitates Collaborative

Information Sharing through various tools in our organization," and"Effective cataloguing and archiving procedures are in place for document management in our organization" [5].

E. Intention to Share Information: This item was measured with 3-item scale created via ("Ryu et al."). The 3-items have been "I will make an effort to share Information with my colleagues," and "I will share Information with my colleagues." Each one of the items has have been rated on 5-point Likert scale "1= strongly disagree to 5 =
 Strongly agree." [6].

F. Expected Contribution: Expected contribution was measured with 5-item scale created via ("Bock et al."). The 5-items have been "KS would help other members in the firm to solve problems," and "KS would create new business opportunities for the Institute" [6].

II. RELATED WORK

There is recognition among researchers in: the importance of the exchange of Information among employees in different government and the private Institute s, and their ability to raise the level of creativity, strengthen the regulatory and competitive advantage between researcher's performances. Many researchers have been conducted inside the universities on this subject. However, research has been conducted for studying combination of aspect which affect the exchange of Information- for example. indicated that employees' work on the same issue in evaluating the cons and pros of Information sharing. The advantages could be extrinsic and intrinsic rewards, enhancing the performance related to Institute and expanding status. A considerable drawback is related to sharing is "conceivably give away a source of power and expertise to be other's". The parts of Information sharing are investigated further by (Wang and Noe) showed that the benefits of social exchange are priceless, but require a "personal commitment, gratitude and confidence." Moreover, exchange of Information might allow the emergence of fraternal relationship, and lead to a further exchange of Information among employees within the Institute s. It can be the most essential part in the academic community because it supports the exchange of Information and leads to the dissemination of scientific research [7].

III. ELEMENTS AFFECTING ON INFORMATION SHARING

It was generally examined and proved that certain covering aspects impacting the Information sharing conduct occurred. Such aspects were examined from various viewpoints, for example, since the management practices of individuals are promoting sharing Information, sharing Information problems, as difficulties in Information diffusion, since aspects inspiring individuals for sharing and aspects impacting the human performance. Regardless of the way that the fundamental anxiety of the presented study is related to the motivational variables, it is of high importance to considered various fields of interest in antecedent sharing Information, clarifying the examined research problem. Thus, technological, individuals, and organizational aspects impacting the sharing Information are covered in this part. The study indicates that there are 2 approaches for dealing with aspects impacting sharing Information; positive method to study the aspects enabling Information sharing and pessimistic method to study the aspects obscuring or stopping sharing Information [8].

(Cabrera and Cabrera) suggested 7-unique management practices of individuals for fostering Information sharing within organizational workers, which are work staffing, design, preparing and improvement, performance appraisal, compensation and rewards, technology and culture. perceives more than three dozen sharing Information barriers showing up in previous sharing Information literature. Such aspects can be categorized into 3-subgroups related to possible challenges: technological, individual, and organizational. Similarly, the researcher examined the robustness of Information sharing, also examined exclusively tacit Information and noted that tacit Information must be handled exclusively from the explicit Information for unleashing its influence. She introduces that troubles in tacit sharing Information are, for the most part, perception, time, language,

distance and value. Language and perception are mainly individual aspects obscuring sharing Information, with time, values and distance could be considered as organizational problems. Tacit Information's value can be considered as organizational culture; distance and time instead are majorly dependent on organizational structure. In their study, Small and Sage agreed with ("Ives et al.") that sharing Information is human conduct that should be examined with regard to human's performance [9].

IV. THE THEORY OF PLANNED BEHAVIOR (TPB)

The study implemented TPB (2002), that offered a system for studying the academics' Information sharing. TPB was developed to be a major and widespread conceptual framework for studying the actual behavior and the behavioral intentions of individuals. Based on TPB (1985), the behavior of human is directed via 3 types of salient beliefs: behavioral belief related to possible behavior's consequences or attributes, prescriptive belief related to prescriptive expectations regarding other individuals, as well as control belief related to elements which might delay or enable the behavior's performance. With regard to their respective aggregates, the behavioral beliefs create unfavorable or favorable attitude toward behavior; normative belief lead to subjective norms or perceived social pressure; while control belief lead to sensed behavioral controls, perceived ease or trouble in carrying out the behavior. In combination, perceived behavioral control, norms, and attitude, result in creating behavioral intention [10].

Yet, because all methodological and conceptual ambiguities in the perceived behavioral control, indicated that the perceived behavioral control must be considered as 2 interrelated components, which are controllability and self-efficacy. As stated by (Ajzen), the more satiselementy subjective norm and attitude, and the greater controllability and self-efficacy, the stronger must be the intention of individual to achieve behavior. Intention can be considered as immediate antecedent of behavior. TPB was applied in previous study to describe seeking and supply of Information. The framework created by (Stewart and OseiBryson), is used as a basis to investigate how the TPB applies on Information sharing. This framework is recent and includes most relevant papers regarding this theory [11] [12].

A. Sample, Unit of Analysis and Respondents

The sampling frame regarding the presented study consisted of the lectures in the Computer science Educational Institution. More specifically, randomly sampling technique was used. A significant step in the research design is determining unit of analysis or unit about which the statement was made. The presented a review suggested statistical analysis and data collection, which had been implemented at the organizational level. Thus, the unit of analysis for the presented study has been the lecturers in Computer science Educational Institution of Baghdad University. The totally faculties in Computer science Educational Institution Baghdad University is 12 and number staffs are 3361. The samples for the presented study is going to be evaluated with the use of a method provided via (Krejcie and Morgan), that is 346 out of total academic staff. Table Population and sample size

Faculty	Total Lecturers	%	Sample Size
Faculty of computer science, college of science, Baghdad university	460	31%	14
Faculty of computer science, college of science for women, Baghdad university	187	26%	24
Faculty of computer science, college of education for pure science, Baghdad university	241	29%	52
Faculty of computer science, college of	105	14%	10

education for pure science for women, Baghdad university			

B. Questionnaire Development

Distinctive importance has been provided to penalization of constructs in the framework of the research. Items have been majorly derived from formerly examined survey instruments for taking advantage of well-tested psychometric measures. The majority of constructs have been operationalized via altering these formerly validated scales, since direct utilization of former instruments has not been always achievable. Furthermore, each constructed have been evaluated through the use of multiple indicators for capturing underlying theoretical dimensions efficiently. The presented study has been applied to former inventory questionnaire items. The questionnaire has been divided into 2 parts. The first one included demographic question related to the respondent such as educational background, age, gender, and so on.

The other one has been divided into 10 components. Pre-test has been carried out for producing more dependable and more effective questionnaire. Pre-test has been carried out via presentations and discussions with expert questionnaire. Their note has been taken into account prior to the end of distribution related to the questionnaire. Questionnaire applied Likert scale 5-points starting from 1 (strongly disagree), 2 (Disagree), 3 (Neutral), 4 (agree) to 5 (strongly agree). Likert scale is of high importance due to its role in grounding each one of the points in rating for something tangible to respondents, im comparison to scale of figures. Since word associations, Likert's scales have tendency toward working more effectively when compared to numeric scale. (Nunnally and Bernstein, Carmines and McIver) Review the reasons for applying multiple measures of things instead of using single detail for measuring the psychological attributes.

C. Conceptual framework

The presented study has examined the framework of Information-sharing for improving Information sharing among academics; such enhancement could be of high importance to the scientific research in universities for boosting their ranks and Information. Furthermore, such enhancement could resolve social issues in Iraq. Yet, the presented framework includes 4-elements. Computer science Educational Institutions in Baghdad University can apply the presented framework for enhancing their scientific research; also, the presented framework could enhance information-sharing, interactions, collaborations, and trust among universities and researchers. Therefore, such cooperation promotes changing the situation into better particularly in the sector of higher education and especially in Iraqi government:

1. Statistical Analysis

Practically, all researches consist of certain numerical data or consists of data which can be quantified for helping in answering thesis research questions and to meeting targets. There are many statistical approaches used to analyze the data based on the study's nature. Following collecting the survey, data has been analyzed through the use of many statistical approaches. Statistical approaches could be applied for summarizing or describing collection of data. Statistical approaches have been applied during the presented study are; Demographic Analysis, Descriptive Analysis, Reliability Analysis and Regression Analysis through SPSS. Statistical analysis has been carried out for testing the relations between elements supposed by who (variables) applied in suggested modules via multiple regression approaches, that study the relation between variables predict their behavior in future. Such approaches are predicting the variables according to participant value at other variables. Also, the approach of utilizing "free" variables which is going to impact certain other "dependent variables.

2. Descriptive Analysis

The data of a given situation must be characterized by some statistical measures for estimation or comparison with similar data or making inference about sample population to which the data

belong. Data analysis usually involves reducing accumulated data to a manageable size, developing summaries, looking for patterns and applying statistical techniques. Scaled responses on questionnaires and experimental instruments often require an analyst to derive various functions, as well as to explore relationships among variables.

3. Reliability Analysis

In statistical terms, the usual way to look at reliability based on the idea that individual items (or sets of items) should produce results consistent with the overall questionnaire. Reliability is simply the ability of the questionnaire to create the same results under the same conditions. Reliability can be estimated via different methods. Cronbach's alpha is the most common method to measure scale reliability. Below Table shows the reliability of the measurement scales. Cronbach's alpha reliability scores should be greater than 0.7 (minimum) (Cortina, 1993). An alpha of more than 0.7 would indicate that the items are homogeneous and measuring the same constant.

4. Regression Analysis

Regression analysis is a statistical tool for the investigation of relationships between variables where it controls for many alternative explanations and variables simultaneously (Neuman and Kreuger), this is the powerful statistical method for sorting out influences between variables. It allows the user to identify how several variables simultaneously influence the value of another variable. These influences can be assessed with statistically computed degrees of confidence, i.e., whether the results are due to some random occurrence or if the observed influences occur in a systematic, non-random fashion. Regression analysis as used here assesses how various member characteristics influence the participation activities.

5. Questionnaire For Data Collection

A quantitative research method was conducted in order to measure and test the relationship between different elements. Quantitative research is defined as 'collecting numerical data that are analyzed using mathematically based methods (in particular, particular statistics)'. For this, study distributed 346 questionnaires to total members of respondents. 334 filled questionnaires were received back. After checking the questionnaires, eliminated 22 questionnaires because of too many missing values and wrong data provided. The final number of valid responses was 196, which mean that the response rate is 88.75%.

VI. CONCLUSION

This research makes a valuable contribution given the dearth of empirical studies on Information sharing in Computer science Educational Institutions. It has reviewed the effect of some elements on academics' Information sharing behavior in Computer science Educational Institutions adopting the TPB. As such, it makes an essential contribution to the investigation of Information sharing behavior in a new context. This study identified four important elements, which motivate academicians in public computer science Educational Institution to share their Information. These elements are Normative beliefs on information sharing, Autonomy, Technology platform, Attitudes towards information sharing. This review extends prior research on academic staff Information-sharing motivations in higher learning institutions, particularly, public universities.

The study findings might provide useful insights for the lecturers of universities to exploit and employed these important elements in order to encourage their academic staff to share their Information, which enhanced their performance. This would promote, academics themselves would feel encouraged to create and share Information by conducting more researchers and scientific studies and by publishing scholarly works as well as by exchanging their Information and expertise.

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