Exploring Factors That Influence Academics Behaviour toward Knowledge Sharing Using Web Technologies

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ABSTRACT
Knowledge sharing has become a significant source of success in knowledge management. In many organizations, knowledge management is often inadequate when it comes to web-based knowledge sharing, particularly among academics who work in Saudi universities. To ensure that a knowledge sharing system can be well implemented when communicating internally in an academic context, there is a need to know why academics accept or reject the use of web-based knowledge sharing systems. Therefore, the aim of this research is to determine the factors that affect academics' behaviours toward using web technology to share knowledge in Saudi universities. A web-based knowledge sharing adoption model is constructed based on the factors which already exist in technology acceptance theories, such as the unified theory of acceptance and use of technology and task-technology fit, as well as other factors which are explored in knowledge sharing literature reviews to enrich the proposed model.

CCS Concepts
• Human-centered computing→HCI design and evaluation methods • Human-centered computing→User models • Human-centered computing→HCI theory, concepts and models • Human-centered computing→Empirical studies in HCI • Human-centered computing→Social content sharing • Applied computing→Collaborative learning.

Keywords
Knowledge Management; Knowledge Sharing; Model; Technology Acceptance; Adoption; Information systems; Academics; Higher Education.

1. INTRODUCTION
Large organizations are becoming increasingly aware of the importance of knowledge management as one of the most influential practices for achieving competitive advantage. This leads organizations, including higher education institutions, to focus on implementing the required knowledge management systems successfully [1]. A review of the literature reveals that knowledge sharing is one of the essential roles of higher education institutions where knowledge is created through research, disseminated through publication, and shared via teaching, or presenting at a seminar [2,3]. Teaching activities result in creating remarkable amounts of written course-related resources which are considered as explicit knowledge [2]. In terms of intangible knowledge, knowledge management theorists contend that tacit knowledge which is preserved in the minds of academics is more difficult to share and to be expressed in tangible form as it involves personal intellectual skills and problem-solving capabilities, and is gained through teaching experience [2]. Uncodified tacit knowledge can affect academics' performance and may result in lower levels of achievement.

Various studies have affirmed that information technology plays an important role as a knowledge enabling tool which can support knowledge sharing, encourage academics' collaboration, and enhance the internal knowledge environment [4,5]. Web-based knowledge sharing can be defined as the process of transferring different types of knowledge to others using information and communication technology (ICT) tools such as emails, blogs, video conferencing, social networks, wikis, or internet applications [6]. Web technology, for example, is one of the effective tools that would encourage and enhance knowledge sharing amongst employees [7,8]. Sharing knowledge via web technology helps people stay globally connected, and builds relationships by establishing a knowledge community [8]. It also facilitates the flow of knowledge between academic members and supports the creation of new knowledge [9].

This research considers the use of knowledge sharing in Saudi Arabian universities. Most Saudi universities are not geographically co-located as they have remote campuses in both rural and urban areas and that could lead academic experts to travel between these campuses to either attend a meeting or share knowledge with others. Furthermore, Saudi Arabia is a religious country and the religion of Islam is reflecting the practice of education and the structure of universities, in which male and female academics are segregated in separate campuses. It is required to transfer knowledge between academics in different departments (male and female) and among different campuses. Consequently, face-to-face communication is no longer an effective way of sharing knowledge. Thus, there is need to implement a web-based knowledge sharing system which can enhance communication among geographically dispersed academics, taking into account the respect of culture and religion. Additionally, due to the issue of academics' retirement, many

ICETC 2017, December 20–22, 2017, Barcelona, Spain

ACM ISBN 978-1-4503-5435-6/17/12…$15.00
https://doi.org/10.1145/3175536.3175566

years of experience in the teaching profession could be lost without being recorded. The valuable intellectual property that experienced academics hold would thus also be buried. It would be more valuable if these skills and this tacit knowledge are recorded, organized, and shared in a way that encourages new teachers to use it. Moreover, there is a high probability that printed materials could be lost or destroyed as a result of natural disasters or academic disregard. Additionally, there is a huge duplication of effort in the Saudi educational sectors, resulted in creating remarkable amounts of written course-related resources. Due to the lack of reliable systems for sharing these resources among other academics who teach the same subject in the same department, faculty members are likely to recreate new teaching materials instead of investing their effort doing research work and producing publications.

Due to the noticeable recognition of the importance of knowledge management in higher education as an enabler of an interactive environment, together with the challenges identified above that Saudi universities face, this research considers the application of knowledge sharing amongst academics in universities in Saudi Arabia. Implementing a web-based knowledge sharing system will enhance communication among academic staff, but it might not be effective without exploring user acceptance of using this system. User acceptance has been considered as a major determinant of the success or failure of the system [10]. Previous studies have investigated user acceptance of using new information systems, however, to the best of the researchers' knowledge, the literature indicates a limited amount of empirical research which explores academics' acceptance of web-based knowledge sharing systems in the Arab region in general and in Saudi Arabia in particular [11]. Thus, this study examines academics' behaviour towards using web-based knowledge sharing systems through identifying the factors that encourage or prevent academics from using web technology to share knowledge.

The strength of this research lies in combining the behavioural, technological, and organizational determinants from two well-established theories, namely the task-technology fit (TTF) model, and the unified theory of acceptance and use of technology (UTAUT). The integration of these related theories into a single model contributes to the field of information systems (IS).

This paper is structured as follows. The authors first provide additional background on knowledge sharing and revisit the literature related to technology adoption. Then, the theoretical bases of the study are described. Following this, the conceptual model is constructed to understand web-based knowledge sharing adoption. Finally, the methods which will be used for validating the model is presented.

2. LITERATURE REVIEW

2.1 Knowledge Sharing

Knowledge sharing has been considered a significant component of success in knowledge management. The main activities in knowledge management are acquiring, sharing, and storing knowledge [1]. Knowledge sharing is essential to the success of all organizations, including higher education institutions where academics can communicate their knowledge and visions [1,3,12]. Higher education institutions have been described as knowledge-intensive environments where faculty members share the same common missions [1]. They work as the disseminators of knowledge through teaching and as the producers of knowledge through conducting research. Knowledge sharing depends on individual behavior toward accepting or rejecting the use of web technology for disseminating knowledge [1].

Behavioural intention is an indicator of an individual's readiness to share knowledge and it can be affected negatively or positively by certain factors [11]. In this research, behaviour intention refers to the academic's likelihood to share knowledge using web technology.

2.2 Theoretical Background

The literature on IT adoption supports an enormous number of theoretical models [13,14,15] that have been applied to different contexts. However, a review of the literature reveals that there is no well-defined adoption theory in terms of knowledge sharing adoption. Therefore, to investigate the factors that could affect academics in terms of the degree of their acceptance of the use of web technology for knowledge sharing, theories that place emphasis on technology acceptance area should be taken into consideration.

It was found that the unified theory of acceptance and use of technology (UTAUT) has been widely used to determine behaviour intention and usage [14]. The aim of UTAUT is to explain a user's intention to adopt and use an information system. Since the UTAUT model has resulted from testing and combing different technology adoption models, it is considered as a benchmark for constructing the web-based knowledge sharing adoption model.

The task-technology fit (TTF) model measures the capabilities of a technology to support the function of a task and meet the user's requirements with the available technology functionality. Individuals will adopt a new technology if the functions of that technology meet the users' requirements [15]. Task-technology fit suggests that the appropriate fit between knowledge sharing system features and task requirements is a key determinant of accepting the use of technology for knowledge sharing [16]. This means that users are more likely to adopt the technology only if it supports knowledge sharing tasks and improves work efficiency.

As previous studies have determined a strong relationship between what the technology can do (task-technology fit) and what the benefits of using it are to enhance task performance (performance expectancy) [17], this research adopts both models to explore academics' attitudes toward accepting the use of technology for knowledge sharing.

The next section outlines the significant factors and combines them into a web-based knowledge sharing model.

3. CONCEPTUAL MODEL

Based on the literature review, the proposed model, which can be seen in figure1, is constructed to explore academics' behaviours towards sharing knowledge via web technology. The presented model intends to blend factors from the unified theory of acceptance and use of technology (UTAUT) model and the task-technology fit (TTF) model, as well as combines external factors that have been explored from knowledge sharing literature reviews [18,19].

3.1 Individual Motivation

Previous research shows that one of the most common barriers to sharing knowledge via web technology is the absence of intrinsic and extrinsic motivations. Many studies have found that intrinsic rewards have a noticeable influence on staff attitudes toward knowledge sharing [20, 21]. Some employees avoid using Web

2.0 technologies such as blogs and wikis as online knowledge sharing tools due to the absence of recognition programmes [18].

Enjoyment in helping others appeared to be a key factor that could affect knowledge sharing using web technology. It is defined as the degree of personal perception that the system is fun and enjoyable [22]. It has been found that knowledge workers who feel pleasure when helping others are likely to be more motivated to participate in knowledge sharing activities [23].

Self-efficacy could also affect knowledge sharing using web technology. Previous studies suggested that individuals with high self-efficacy are more likely to have positive attitudes toward using web tools for knowledge sharing [1,24]. Some academics use technology to share their knowledge because of their belief in their own abilities and skills, and the belief that using technology can lead to work improvements [25].

Outcome expectancy is strongly correlated with attitude toward using web technology for sharing knowledge. According to the Saudi study conducted by [10], outcome expectancy has a positive influence on behavioural intention to use new technologies. When employees are unaware of the potential outcomes, it is more likely that they will perceive the cost of using new tools to be higher than the benefits which consequently could inhibit them from sharing knowledge using web tools.

3.2 Technology Acceptance

This study examines two factors that influence academics' attitudes toward sharing knowledge: perceived usefulness, and perceived ease of use. Perceived usefulness has a significant impact on adopting the use of a web-based knowledge sharing system. If users perceive that using the online systems can improve their job performance, they become more motivated to use the systems for knowledge sharing purposes [26]. Another factor that could also affect knowledge sharing behaviour is perceived ease of use which can be defined as the person's belief that using a web technology for knowledge sharing is free of effort [22]. Many faculty members, especially older professors, might face difficulties when using a knowledge sharing system such as an e-learning system. Therefore, designing an ease of use knowledge sharing system which meets users' requirements is likely to enhance the behaviour of knowledge sharing [27, 28,29].

Task-technology fit measures the capabilities of a technology to support the function of a task to meet user's requirements with the available technology's functionality. Individuals will adopt a new technology if the functions of that technology meet their requirements [15]. Task-technology fit suggests that the appropriate fit between knowledge sharing systems' features and tasks' requirements is a key determinant of accepting the use of technology for sharing knowledge [17].

3.3 Social Influence

Subjective norm is considered as one of the factors that might affect the intention to accept using web tools for sharing knowledge amongst academics. It has been defined by [3] as the degree of the person's perceptions regarding social pressure from their managers and colleagues which could impact the adoption of a new technology for knowledge sharing. Various studies have explored positive connections between the subjective norms and the individual's intention to adopting a new technology. It has been found that subjective norms, such as family and friends, have a positive effect on an individual's attitude due to the high individualism-collectivistic characteristic of the Saudi Arabian culture [18].

3.4 Organizational Culture

Another factor that has been discussed in the context of knowledge sharing amongst academics is trust, which includes trusting the quality of knowledge being shared and trusting that others will share their valuable knowledge. In an online setting, a high level of interpersonal trust among team members has a positive effect on the adoption of e-collaboration tools for knowledge sharing [30]. Building an atmosphere of trust among an online community's members would facilitate communication and collaboration among participants and is likely to enhance knowledge sharing activities using web technology [11].

Lack of time is also considered as one of the barriers that could

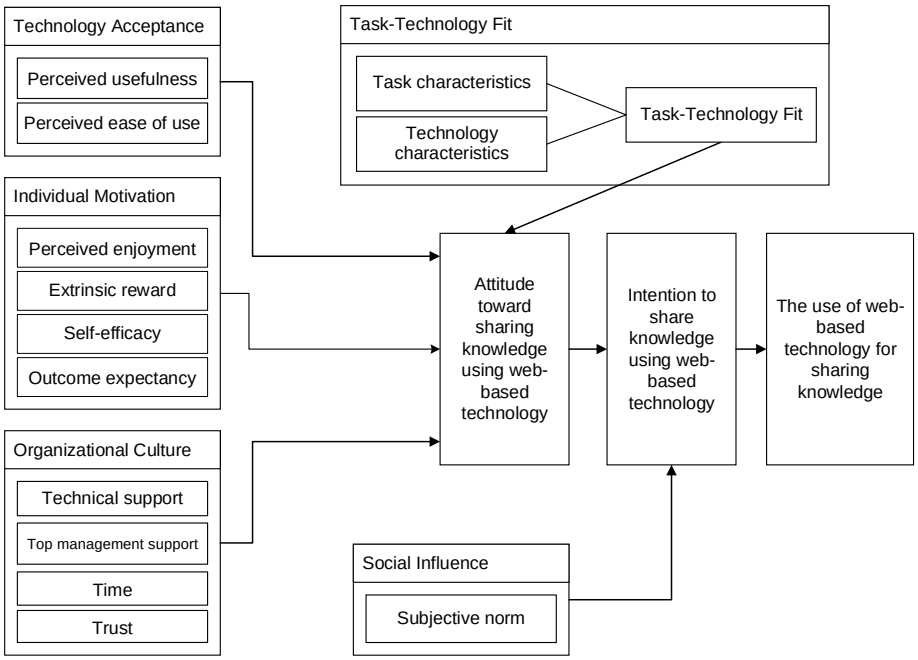

Figure 1. Web-based Knowledge Sharing Adoption Model.

prevent academics from contributing in sharing knowledge using web technology. The greatest concern regarding knowledge sharing using an online tool was the anticipation that it might increase the workload [31]. Teaching commitments, professional meetings, and research activities, all require an amount of faculty members' time. Consequently, assigning time to web-based knowledge sharing activities is often difficult or impossible [21].

Numerous studies have found that top management support is considered one of the most important factors that could influence the use of web technology as a knowledge sharing tool. Creating awareness about knowledge sharing technology, training employees how to use the technology, and acknowledging users who share their knowledge, are all crucial elements of top management support. The absence of these elements could lead academics to use traditional ways of sharing knowledge instead of using web technology [18, 32]. Top management should activate their leadership role in any knowledge sharing adoption activity by encouraging the use of web technology for knowledge sharing [18].

Studies on knowledge-sharing in the context of higher education have also found that technology availability, technology support, and technology compatibility could all influence knowledge sharing using web technology [32,5].

4. CONCLUSION AND FUTURE WORK

The research objective is to enhance web-based knowledge sharing practices among academics in Saudi universities. Therefore, this study explores the factors that affect academics' behaviours toward using web technology to share knowledge in Saudi Arabian higher education institutions. The conceptual model has been constructed by combining factors investigated through reviewing the existing knowledge sharing literature, as well as factors from the UTAUT and TTF models. Then the factors have been categorised and grouped, based on the definition and the concept of each factor, into individual motivation, social influence, organizational culture, and technology acceptance. These results are not conclusive and further research needs to be done with more evaluation of the model to ensure that it fits the academics' needs.

From the author's perspective, to ensure a successful implementation of knowledge management systems in Saudi universities, all the model's factors that will be explored in the empirical study should be taken into consideration. A thorough understanding of the resulting model may provide useful insights to the management of Saudi Arabian higher education institutions by applying appropriate strategies and procedures to support knowledge sharing activities.

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