

Exploration of factors affecting the use of Web 2.0 for knowledge sharing among healthcare professionals: an Indian perspective

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Abstract

Purpose – This study aims to explore knowledge sharing (KS) attitudes and intention of healthcare professionals in India through the use of information and communication technology platforms such as Web 2.0. The research specifically focuses on individual motivators such as the face, reputation and reciprocity, which, to an extent, are influenced by indigenous culture.

Design/methodology/approach – The study uses a cross-sectional survey design to collect data. A sample of 207 was obtained from professionals working in healthcare in India. The data were analyzed using the partial least square-structural equation modeling.

Findings – The results confirmed that attitude toward KS leads to the intention to share knowledge. Attitude toward KS using Web 2.0 was found to be positively related to self-efficacy and reciprocity. Furthermore, face and reputation were found to moderate the relationship between attitude and intention to share knowledge while the moderating effect of rewards was found to be insignificant.

Research limitations/implications – This study was limited to healthcare professionals in India. Knowledge workers in other industries can be considered for further studies.

Practical implications – This study provides useful insights into KS practices using Web 2.0 among knowledge workers. Particularly it emphasizes the individual motivators, which can be manipulated by Web 2.0 designers to nurture a positive attitude toward KS and to encourage user's participation.

Originality/value – The study investigates, using an integrated theoretical framework, how certain factors act as a motivator or a barrier for sharing knowledge using Web 2.0. in the specific cultural context of healthcare professionals in India.

Keywords India, Healthcare, Web, Knowledge sharing, Reputation, Face

Paper type Research paper

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Introduction

The transition from the global economy to a knowledge-based economy has emphasized the role of knowledge management (KM) systems and knowledge workers in conception and application of knowledge (Caputo *et al.*, 2019; Singh *et al.*, 2018). Healthcare practitioners are considered knowledge workers (Hendriks, 1999) to the extent that their profession requires constant updating of knowledge and skills to serve the needs of their patients best. Knowledge sharing (KS) practices among healthcare practitioners have significant implications for the quality and efficiency of healthcare services.

The frequent need to update knowledge leads healthcare professionals to refer to both conventional and technological knowledge sources (Sheffield, 2008). Information and

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communication technology (ICT) lowers the barriers related to time and space (Caputo *et al.*, 2018), enabling knowledge workers easier access to their knowledge sources and, therefore, enhancing the sharing of information and knowledge (Hendriks, 1999). One such platform that boosts KS is Web 2.0 (Singh *et al.*, 2018), a technological platform that fosters interaction, collaboration and KS among individuals, transcending geographic boundaries (Levy, 2009). The active participation of the users is the key to its architecture and effectiveness. Hence, the attitude and intention of individuals to actively participate in KS have a significant impact on the effectiveness of such platforms. Drawing on the theory of reasoned action (TRA), this study explores the link between KS attitude and KS intention of healthcare professionals in India through the use of ICT platforms such as Web 2.0.

The effectiveness of KS practices among physicians through Web 2.0 is especially relevant in the milieu of developing countries such as India, where healthcare practitioners are increasingly adopting internet and mobile technologies to enhance their knowledge as a result of improved digital penetration and access (Singh *et al.*, 2018).

It has been well-established that KS is affected by cultural values (Hambrick *et al.*, 1998; Hofstede, 2001; Hutchings and Michailova, 2004). Therefore, understanding how national culture might affect KS becomes a prerequisite to designing an effective KM system. For example, reputation and face concerns play an important role in communication and social exchanges in countries such as China and India (Ting-Toomey and Oetzel, 2001).

The manifestation of such factors affects users' attitudes and intentions negatively; hence, Web 2.0 has not been used to its full potential as a KS tool (Paroutis and Al Saleh, 2009). This study focuses particularly on indigenous cultural aspects such as the face, reputation and reciprocity, which are deemed to exert substantial influence on users' motivation. Social exchange theory (SET) suggests the rules of exchange with no possibility of bargaining (Cropanzano and Mitchell, 2005) such that the action of KS will be contingent on the response in kind, such as an increase in reputation.

Drawing from data out of a sample of 207 healthcare professionals from different organizations across India who are currently using Web 2.0 for KS purposes, we develop and test an integrated model, extending both predictive and descriptive value to the issue of KS. This study uses physicians working in tertiary hospitals because they need to be research-oriented, innovative and ready to embrace any new knowledge-seeking opportunity that can be attained through varied mechanisms of organizational learning (Ryu *et al.*, 2003). Tertiary hospitals are characterized by a higher level of specialty care, specialized equipment and expertise than primary and secondary care (Ryu *et al.*, 2003). Our research findings should help designers of KM systems to understand the impact of cultural factors that drive healthcare professionals to share knowledge and, therefore, to increase the effectiveness of ICT tools through user acceptance (Caputo and Wallezky, 2017).

The rest of the paper is structured as follows. First, we explain the theoretical underpinnings and framework used to argue the hypotheses. Then we build the hypotheses and the conceptual model. The next section presents the research methodology and the results of the study. Afterward, the findings are discussed, followed by the implications for theory and practice. The concluding section discusses the limitations of the study, directions for future research and conclusion.

Web 2.0 and knowledge sharing

Web 2.0 provides an open architecture for KS, with increased bandwidth and computing power, thus lowering the barriers to publishing and facilitating connectivity of ideas among its users (Weinberger, 2007). Effective KS requires motivation and encouragement through user-friendly mechanisms (Rosen *et al.*, 2007). In short, if the motivation to share knowledge is absent or insufficient, the tools that facilitate KS will be ineffective regardless of the quality

of their architecture. Several studies (Siau *et al.*, 2010; Yan *et al.*, 2016) show that factors like face concern affect KS in ICT enabled environments. As these variables are rooted in culture, KS is influenced by culture (Hambrick *et al.*, 1998). In India, values like modesty, desire to save face and build reputation can become non-negligible obstacles to KS behaviors in online platforms (Ardichvili *et al.*, 2006).

While culture has been acknowledged as a relevant factor in KS practices and KM systems, empirical research on the topic is scarce. Studies on KM specific to India have explored factors such as team demographics (Ojha, 2005), competency development (Naim and Lenka, 2017), organization citizenship behavior (Ramasamy and Thamaraiselvan, 2011), perception of organizational justice (Tamta and Rao, 2017) and perceived costs and benefits (Gupta *et al.*, 2012). Additionally, literature has examined several contextual settings such as SMEs (Anand *et al.*, 2013), public sector banks (Tamta and Rao, 2017). The literature on the usage of Web 2.0 has been majorly in the context of higher education (Tyagi and Kumar, 2011) or libraries (Agarwal *et al.*, 2012). Studies on KS using Web 2.0 seems somewhat limited.

Virtual communication is vulnerable to mistrust and miscommunication as not knowing an individual personally, his/her background, expertise or strengths, raises questions of credibility and accessibility. Going the extra mile to share knowledge on Web 2.0 comes at a price of time and effort with no guarantee of reciprocation or appreciation (Rosen *et al.*, 2007).

We have examined the impact of three such cultural factors, namely, face, reputation and rewards on the relationship between attitude toward KS and intention to share knowledge. The context, i.e. India, being more of a collectivist society (Hofstede, 2001), becomes an interesting site for inquiry.

Theoretical framing

KS has drawn the attention of both practitioners and scholars. To understand KS's attitude and behaviors, researchers have used several theoretical perspectives, such as the TRA, SET, social capital, organizational learning and knowledge-based and resource-based views of the firm. This study adopts a research model that is grounded in both TRA (Fishbein and Ajzen, 1975) and SET (Blau, 1964). There are several reasons for this.

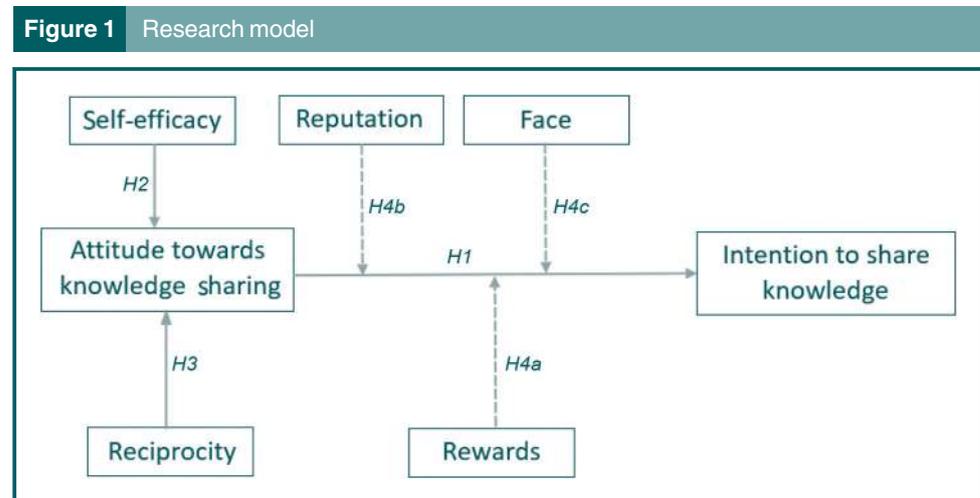
First, the TRA provides a robust predictive model which has been used with success in several research fields, and specifically on the issue of knowledge workers' attitude and behavior regarding KS (Bock *et al.*, 2005; Lin *et al.*, 2016; Ryu *et al.*, 2003). According to the TRA behavior is determined directly by one's intention to perform the behavior; intention, in turn, is influenced by attitude, i.e. one's a positive or negative evaluation of performing the behavior, and by the subjective norm, i.e. the perceived social pressure to perform or not to perform the behavior. Finally, the anticipated consequences of performing or not performing the behavior affect both attitude and subjective norm.

SET (Blau, 1964), on the other hand, has often been invoked in KS studies in a variety of contexts (Liang *et al.*, 2008). According to SET, the desire to receive something in return through interaction is the primary motive to exchange resources. KS is a resource and knowledge exchange, and sharing is done to receive intrinsic and extrinsic benefits (Kankanhalli *et al.*, 2005). Intrinsic paybacks include the sheer pleasure of participating in an activity and which drives individuals to accomplish specific tasks. In contrast, extrinsic paybacks are outside factors in the form of rewards, reciprocal benefits or reputation. Prior KS studies (Chen and Hung, 2010; Lin, 2007; Wasko and Faraj, 2005) show that knowledge workers, and healthcare professionals, in particular, are motivated by both intrinsic and extrinsic paybacks such as altruism, self-efficacy, expected rewards or anticipated reciprocal benefits.

Our research model (Figure 1) integrates an individual's motivational beliefs toward KS (SET) within the behavioral sequence provided by TRA to the extent that both theories provide complementary perspectives. In the behavioral sequence explained by TRA, intentions are the immediate determinant of behavior, thereby acting as a mediator between attitude and behavior. Attitudes must transform into intentions to influence behavior (Bagozzi and Yi, 1989). While TRA adds *predictive* value to the model by explaining the link between attitude and behavior, SET adds *descriptive* value by introducing the individual's motivational beliefs that may influence, to different degrees and in a different fashion, the behavioral sequence. For example, intrinsic motivational beliefs such as knowledge self-efficacy will be expected to influence a physician's attitudes toward KS directly, as these beliefs predispose the individual to evaluate positively or negatively the KS activity. The same occurs with regard to extrinsic motivational beliefs such as the sense of reciprocity, which will also be expected to predispose the individual toward KS, i.e. attitude. However, other extrinsic motivational beliefs related to the opinion of others such as reputation and face concern or the specific consequences of the action such as rewards will be expected, as subjective norms, to moderate the relationship between attitude and intent (Ryu et al., 2003) when the individual considers the anticipated consequences of performing or not performing the behavior.

The model is built upon the premise in the TRA that attitude, i.e. either a positive or a negative evaluative judgment or appraisal toward KS, affects an individual's intention/behavioral drive to share knowledge (Bock et al., 2005; Fishbein and Ajzen, 1975). This main hypothesis is reinforced or augmented with intrinsic and extrinsic motivators that are believed to either influence directly attitude toward KS or moderate the relationship between attitude and intent. In other words, certain factors will be expected to influence the individual's predisposition to share knowledge, but in themselves, they will not be expected to drive KS behavior. Other factors, instead, will be expected to influence the transition from a pure positive evaluation or appraisal of KS (attitude) to actual KS related behaviors (intent).

Among the different motivational beliefs that populate the literature on SET, we chose to explore those which have been consistently linked in prior empirical research to knowledge worker's KS related attitudes and/or behavior (Wang and Noe, 2010) and, specifically, in healthcare contexts (Lin et al., 2016; Singh et al., 2018; Yan et al., 2016), namely, self-efficacy, reciprocity, reputation, and rewards. Additionally, we selected a factor that we believe to be particularly salient in an Indian context, i.e. face concern (Yan et al., 2016).



Research hypotheses

Based on the discussion above, we propose the following hypotheses:

First, according to the TRA, an attitude has a direct effect on behavioral intent. Prior KS research has confirmed this relationship in different contexts, including healthcare (Bock *et al.*, 2005; Ryu *et al.*, 2003; Singh *et al.*, 2018; Lin *et al.*, 2016). Hence, we hypothesize:

H1. Physician's attitude toward KS has a positive influence on the intention to share knowledge.

Knowledge self-efficacy as an intrinsic motivational belief reflects the individual's perception regarding how he/she leverages his/her knowledge and skills (Bandura, 1986). Self-efficacy has been identified as a motivating driver for KS (Kankanhalli *et al.*, 2005; Lin, 2007; Lin *et al.*, 2016; Wasko and Faraj, 2005). When people believe that their know-how, expertise or skill level can be perceived as useful by others, they tend to nurture a constructive attitude toward KS. In the case of healthcare professionals, this sentiment is reinforced to the extent that their mission is, by definition, to apply their expertise and know-how toward the well-being of their patients (Panahi *et al.*, 2016). Knowledge self-efficacy has also been referred to in some studies (Bock *et al.*, 2005; Singh *et al.*, 2018) as a sense of self-worth. These studies suggest and authenticate that there is a positive relationship between KS and a sense of self-worth. When individuals observe that their KS behaviors add value to others, they develop more confidence in their social standing and perceive worth, which further enhances these behaviors (Chen and Hung, 2010). For example, if a healthcare practitioner anticipates that other colleagues will be able to make better informed medical decisions as a result of KS, he/she will become more enthusiastic about sharing this knowledge and will be more likely to experience a positive attitude toward KS in the future (Singh *et al.*, 2018). Thus, we propose the following hypothesis:

H2. Knowledge self-efficacy has a positive influence on physician's attitudes toward KS.

Reciprocity is an extrinsic motivational belief regarding the obligation of returning a favor that an individual has received from others (Blau, 1964). In the context of KS reciprocity refers to the individual's belief that by contributing to the collective knowledge repository, in case of a need, he/she can also use others' expertise to one's advantage and request for help will be favorably met (Kankanhalli *et al.*, 2005). Literature advocates that reciprocity is a strong motivational driver toward endorsing KS. Reciprocity can also be a means used by the individual to nurture and expand relationships with others with the view to increase access to knowledge or information (Bock *et al.*, 2005). For example, health professionals often share knowledge with the intent of establishing a reciprocal relationship that would give them future access to valuable patient-related data and cases.

However, empirical research on the effect of reciprocity on KS shows conflicting results. While some research (Chang and Chuang, 2011; Singh *et al.*, 2018; Zhang *et al.*, 2017) has suggested reciprocity to have a positive effect on intentions or behaviors toward KS, other has not (Wasko and Faraj, 2005). This variance in findings may be due to the differences among KS communities regarding pro-sharing norms (Kankanhalli *et al.*, 2005), i.e. "when pro-sharing norms are strong and there is a climate of collaboration and cooperation, knowledge contributors do not look for reciprocity when contributing their knowledge" (p. 131), therefore reciprocity in those instances (Singh *et al.*, 2018) would not be a determinant of KS. The current study does not focus on any specific "strong" knowledge-sharing community but rather on physicians' overall attitude and behaviors toward KS in India. Therefore, we propose the following hypothesis:

H3. Sense of reciprocity has a positive impact on physician's attitudes toward KS.

Rewards as an extrinsic motivational belief refer to the perceived monetary benefits of performing a particular action (Lin, 2007). It has been argued that knowledge workers, particularly in healthcare, engage in KS mainly to improve their services to their patients, to

develop professionally and to contribute to their respective body of knowledge, rather than motivated by monetary rewards (Sheffield, 2008). Some studies in healthcare (Lambrou *et al.*, 2010; Swarna Nantha, 2013) supports this idea whereas other studies (Taylor, 2006; Kankanhalli *et al.*, 2005) indicate that physicians as organizational members can be influenced by various types of rewards, such as salary increases, bonuses, job security and promotion, to encourage KS related behaviors. The expectation of rewards, according to TRA, is contingent upon the individual's contextual considerations regarding the likely consequences of his/her behavior (Fishbein and Ajzen, 1975). Therefore, we hypothesize:

H4a. Rewards have a moderating effect on the relationship between the physician's attitude and intent toward KS.

Reputation as an extrinsic motivational belief refers to the overall judgment or opinions about a person and leads to an individual's attaining and maintaining status in the community. In the context of KS, reputation refers to the perception of respect and professional self-image, which is enhanced through KS (Yan *et al.*, 2016). Previous research (Wasko and Faraj, 2005) has shown that the desire to nurture and develop one's reputation is a substantial incentive for KS.

Moreover, in healthcare, individuals rely sincerely on word-of-mouth when determining which healthcare professionals to approach (Ramsaran-Fowdar, 2005). Healthcare professionals build and hone their reputations by demonstrating their know-how and depth of knowledge in the different areas of their field (Chang and Chuang, 2011). Thus, they will be more prone to engage in KS if they believe it would help them enhance their reputation. Within the TRA framework, reputation refers to the opinion of the individual's referent others, namely, subjective norms, which are posited to moderate the relationship between attitude and intent (Ryu *et al.*, 2003). Hence, we hypothesize:

H4b. Reputation has a moderating effect on the relationship between the physician's attitude and intent toward KS.

Face concern as an extrinsic motivational belief refers to the individual's concern in defending and cultivating his/her positive social image in social exchanges (Yan *et al.*, 2016). Face plays a critical role in communication and social exchanges in countries such as China (Ting-Toomey and Oetzel, 2001), as well as India. As opposed to the neighboring concept of reputation, face concern refers to the specific motivation of an individual "to save face" during a social exchange. While healthcare professionals all over the world share a common motivation to build and protect their reputation within their communities of practice (Wasko and Faraj, 2005), a healthcare professional from a western country will be likely to feel less worried than an Asian counterpart about saving face during KS exchanges, as in his/her culture receiving criticisms or being corrected is experienced as a healthy learning process in the communication exchange (Hofstede, 2001).

Prior literature (Young, 2014) finds that face concern is an important factor affecting KS, notably in ICT enabled virtual environments (Siau *et al.*, 2010; Yan *et al.*, 2016). Moreover, Ardichvili *et al.* (2006) argued that the perceived risks of being disapproved or of being misinterpreted by others are among the most significant obstacles to KS. The fear of being misinterpreted or disapproved is particularly salient in healthcare, as a highly complex field.

Conversely, KS can help physicians gain acceptance and recognition from their peers. When the shared knowledge meets another participant's expectations, the contributor gains face and is praised. Within the TRA framework face reflects, similarly to reputation, the opinion of the individual's referent others, namely, subjective norms, which are posited to moderate the relationship between attitude and intent (Ryu *et al.*, 2003). Hence, we hypothesize:

H4c. Face has a moderating effect on the relationship between the physician's attitude and intent toward KS.

Method

Sample and procedure

Given the lack of a consolidated list of Indian healthcare practitioners, we used non-probability purposive sampling (Bryman and Bell, 2003). Convenience sampling (Wei *et al.*, 2009) was used to include physicians from various geographic locations, rural and urban and public and private hospitals, to reduce the possibility of selection bias. The sample was collected from the physicians who visited the reputed business school of India to attend a short duration training program. A total of 207 responses were received. In our sample, 50.72% of the respondents were male and 49.28% were female. Age variation in the sample was as follows, 19.8% respondents were under the age of 30, 42.5% were in the age group of 30–40 years and 40% of the respondents had age above 40 years.

Questionnaire design and measurement items

A structured questionnaire was developed and used for collecting responses from the chosen sample. The instrument was divided into three parts. The opening section of the questionnaire contained the purpose of the study and suggested that respondents fill the survey without considering what should be the correct answer. Moreover, respondents were explicitly informed that all their responses would remain anonymous. This section helps in developing confidence among respondents, which could result in getting a more honest response (rather than socially acceptable responses) and can help in controlling the common method biases (Podsakoff *et al.*, 2003).

The next section had questions about the constructs, which were measured for the purpose of our study. Constructs were measured using multi-item, an existing scale that had been used in past studies. All items in the construct were measured using a seven-point Likert scale (1 – strongly disagree; 7 – strongly agree), Table 1 describes the scales used in the questionnaire.

In the third part of the questionnaire, demographics such as age, gender and type of hospital where they work were captured.

Results and analysis

Common method bias

Responses for all the variables of the proposed model were collected at the same time from the respondents of the study. Such a method of data collection has a possibility of measurement errors due to common method variance (CMV). To minimize the possibilities of CMV, we followed the guidelines in developing the questionnaire, which could reduce the CMV via the ex-ante approach (Podsakoff *et al.*, 2003). Moreover, ex-post results of Harman's single factor test suggest that common method variance does not appear to be a problem in the data collected for the study (Podsakoff *et al.*, 2003).

Table 1 Scales used in the questionnaire

Construct	No. of items	Source
Attitude toward knowledge sharing (ATKS)	5	Bock <i>et al.</i> (2005)
Face concern (FC)	6	Chan <i>et al.</i> (2009)
Intention to share knowledge (ITSK)	5	Bock <i>et al.</i> (2005)
Reciprocity (REC)	3	Chai <i>et al.</i> (2011)
Self-efficacy (SE)	10	Agarwal and Karahanna (2000)
Reputation (REP)	3	Wasko and Faraj (2005)
Rewards (REW)	4	Bulgurcu <i>et al.</i> (2010)

Model assessment

The conceptual model was tested using the partial least square structural equation modeling (PLS-SEM) approach. SmartPLS 3.2.4 software was used to analyze the data. PLS-SEM, has an advantage over the other approaches, as it can simultaneously examine the relationships between constructs and can test both measurement and structural components, of a conceptual model. PLS-SEM is used for the analysis in this paper because is an appropriate approach for theory building and predictive models (Chin, 1998), It is non-parametric and can be tested using smaller samples (Henseler et al., 2016) and to test the moderation effect, we have used the two-stage approach of PLS-SEM which in general exhibits high levels of statistical power (Matthews et al., 2018). PLS-SEM approach has gained popularity in the field of KM (Cepeda-Carrion et al., 2019). Moreover, PLS-SEM has been used in the KM issues related to the healthcare context (Jamshed and Majeed, 2019; Singh et al., 2018).

Assessment of measurement model

Measurement model assessment is required to establish internal consistency, convergent validity and discriminant validity of the constructs (Hair et al., 2014). In our data, each indicator had a loading above 0.7. Moreover, both composite reliability (CR) and Cronbach's alpha (CA) coefficients were above 0.7 for all the construct; these values suggest that the construct in the model were measured with acceptable reliability (Hair et al., 2014). The average variance extracted (AVE) value for the constructs were above 0.5, suggesting a high convergent validity of the constructs (Table 2). To assess the discriminant validity, the square root of the AVE of each construct must be higher than correlations with other constructs in the model (Fornell and Larcker, 1981). In this study, the square root of AVE on each construct (i.e. the diagonal elements) is greater than the correlations of the construct with other constructs (Table 2) suggesting discriminant validity. Discriminant validity problems are present when Heterotrait-Monotrait (HTMT) values of the construct are higher than 0.85 (HTMT_{0.85} criterion) (Henseler et al., 2016). In this study, HTMT values for all constructs are lower than 0.85 indicate the discriminant validity of the measurement model (Table 3).

Assessment of the path model

The proposed relationship between the constructs was tested using the bootstrapping procedure (with 5,000 subsamples) (Hair et al., 2012). Moderating effects of reward, reputation and face concerns were tested using a two-steps approach (Matthews et al., 2018). We controlled for the age and gender effects on intention to share knowledge. The

Table 2 Validity and reliability

S. no.	Variables	Cronbach's alpha	CR	AVE	1	2	3	4	5	6	7
1	ATKS	0.89	0.92	0.70	0.84	–					
2	FC	0.93	0.95	0.76	0.67	0.87	–				
3	ITSK	0.90	0.92	0.72	0.74	0.75	0.84	–			
4	REC	0.92	0.95	0.87	0.65	0.46	0.55	0.93	–		
5	REP	0.77	0.86	0.68	0.36	0.59	0.60	0.22	0.82	–	
6	REW	0.91	0.94	0.79	0.61	0.70	0.70	0.53	0.44	0.89	–
7	SE	0.97	0.97	0.80	0.68	0.58	0.59	0.46	0.27	0.58	0.89

Notes: CR = Composite reliability, AVE = Average variance extracted, ATKs = Attitude toward knowledge sharing, FC = Face, ITSK = Intention to share knowledge, REC = Reciprocity, REP = Reputation, REW = Reward, SE = Self-efficacy. The diagonal values (in bold) are the square root of AVE while other values are the correlation between the respective constructs

Table 3 Heterotrait-monotrait (HTMT_{0.85}) criterion

Variables	ATKS	FC	ITSK	REC	REP	REW	SE
ATKS							
FC	0.73						
ITSK	0.82	0.82					
REC	0.72	0.50	0.60				
REP	0.43	0.70	0.72	0.26			
REW	0.67	0.75	0.77	0.57	0.52		
SE	0.72	0.61	0.62	0.49	0.32	0.62	

Notes: ATKS = Attitude toward knowledge sharing, FC = Face, ITSK = Intention to share knowledge, REC = Reciprocity, REP = Reputation, REW = Reward, SE = Self-efficacy

results are presented in Table 4. There is a significant positive relation ($\beta = 0.44$, $p < 0.01$) between attitude toward KS and the intention to share knowledge. Attitude toward KS is positively related to both reciprocity ($\beta = 0.436$, $p < 0.001$) and self-efficacy ($\beta = 0.479$, $p < 0.001$). Both face concern ($\beta = 0.13$, $p < 0.1$) and reputation ($\beta = 0.479$, $p < 0.001$) are found to be the positively moderate relationship between attitude toward KS and intention to share knowledge. There is no significant moderation effect of the rewards on the relationship between attitude toward KS and the intention to share knowledge.

Discussion

Attitude toward knowledge sharing and intention to share knowledge using Web 2.0

The results suggest that the attitude toward KS leads to the intention to share knowledge using Web 2.0. This is consistent with the prior literature (Bock *et al.*, 2005; Chen and Hung, 2010; Reychav and Weisberg, 2010; Zhang *et al.*, 2017) and the TRA (Fishbein and Ajzen, 1975) which argues attitude leading to intention. However, this study deviates from prior literature at two points. First, it explores KS attitude and intention in the context of Web 2.0. Second, it examines the motivation factors that influence the path between attitude and intention to share knowledge using Web 2.0. The findings provide useful insights by highlighting the importance of the cultural context in which the KM system is based. Prior research has recognized that KS is the foundation for effective KM, and it involves information exchange through interactions among individuals (Naim and Lenka, 2017). Knowledge within organizations or communities of practice resides in an unstructured form and within social systems (Reychav and Weisberg, 2010). KS cannot be implemented with the help of rigid structures and procedures; rather, it can be effective only when it is facilitated, motivated and encouraged rather than governed by procedures (Gibbert and Krause, 2002).

Table 4 Results of the path model

Paths	Standardized beta	t-value	p-value
ATKS -> ITSK	0.44	6.90	0.00
REC -> ATKS	0.44	7.00	0.00
SE -> ATKS	0.48	7.66	0.00
REW * ATKS -> ITSK	-0.11	1.91	0.06
FC * ATKS -> ITSK	0.13	2.21	0.03
REP * ATKS -> ITSK	0.14	2.96	0.00

Notes: ATKS = Attitude toward knowledge sharing, FC = Face, ITSK = Intention to share knowledge, REC = Reciprocity, REP = Reputation, REW = Reward, SE = Self-efficacy

Factors influencing attitude toward knowledge sharing and intention to share knowledge using Web 2.0

The results also explained the mechanism that can convert attitude to intention. Most prior studies on KS have focused only on the direct effects of various extrinsic and intrinsic motivational factors on KS attitude, intention, or/and behavior (Chen and Hung, 2010; Lin *et al.*, 2016). However, the literature has not examined these various effects in an integrated predictive model. Our study links KS attitude, motivational factors and intention in an integrated theoretical framework that has a predictive value, i.e. by explaining the link between attitude and behavior, as well as a descriptive value, i.e. by highlighting certain motivational beliefs that influence the behavioral sequence. Our findings suggest a direct effect of self-efficacy on KS attitude. Self-efficacy is crucial here because KS is often voluntary. Individuals who doubt their KS capabilities are unlikely to adopt KS behaviors (Chiu *et al.*, 2006). In agreement with prior research, results confirm that healthcare professionals who are confident about their possessed knowledge and find their knowledge to be of value to others are more predisposed to share knowledge. Our findings also suggest a direct effect of reciprocity on KS attitude. While using Web 2.0 may not produce direct reciprocal rewards, increased interaction and use of Web 2.0 leads to increased expectations of reciprocity, which, in turn, can create a positive attitude toward KS.

Further, the study investigates how certain factors act as a motivator or a barrier for sharing knowledge using Web 2.0. in the specific cultural context of healthcare professionals in India. It has been well-established that KS is often influenced by cultural values (Hambrick *et al.*, 1998; Hofstede, 2001; Hutchings and Michailova, 2004). Therefore, understanding how national culture might affect KS becomes a prerequisite to designing an effective KM system. Our study indicates that reputation and face concerns are important factors moderating the relationship between KS attitude and KS intention in ICT enabled virtual environments in India. Both face and reputation are extrinsic motivators related to enhancing self-image. In Asian cultures like India, self-image is highly associated with a positive reputation. Previous research has suggested that the objective of increasing one's reputation is a strong motivation for KS. Moreover, earning a positive face and reputation is an added advantage for healthcare professionals as it creates trust in their practice.

Finally, contrary to our hypothesis, the moderating effect of the rewards on the relationship between KS attitude and KS intention was found to be insignificant. It appears to reinforce the idea that healthcare professionals engage in KS mainly to improve their services to their patients, to develop professionally and to contribute to their respective body of knowledge, rather than motivated by financial rewards.

Implications for theory. The study has various crucial theoretical implications. By extending prior research, this study explores the attitudes and intention toward KS of healthcare professionals in India through the use of ICT platforms such as Web 2.0, with a particular focus on indigenous cultural facets that are deemed to exert a significant influence. This provides insights into the process of KS and what determines KS on virtual platforms. The findings highlight the influence of several factors on KS attitudes, such as self-efficacy and sense of reciprocity, as well as on the relationship between KS attitude and intention, such as reputation and face.

Further, in line with TRA and SET, it explains the relationship between attitude and intention and that different factors drive both. One of these factors is an exchange. An action solicits a response, which, in turn, drives another action. Even virtually using Web 2.0, an action of KS is performed in anticipation of a response like gaining face. This anticipation drives the intention of an individual to share knowledge. Rules of exchange in SET emphasizes reciprocity as the best-known rule (Cropanzano and Mitchell, 2005). The attitude to initiate exchange is contingent on receiving reciprocal benefits. These theoretical implications provide insights into the individual differences which determines attitude toward KS and intention to share knowledge

Implications for practice. Our study offers several insights for KM practitioners, specifically in India and other parts of the world, in general. Knowledge workers like healthcare professionals are engaged in KS practices using different mediums. Because of its reach, the use of the Web as a medium has increased to share and seek knowledge. Our research shows that factors affecting predispositions toward KS, i.e. attitudes, such as self-efficacy and reciprocity, as well as contextual motivating factors such as face and reputation, are both equally critical when it comes to encouraging behavioral outputs related to KS. Practitioners can design ways to manipulate such factors to nurture a positive attitude toward KS and to encourage user's participation to create the virtuous cycle of increased participation leading to an increased perceived value which is key to the success of this type of ICT platforms. Examples of possible mechanisms to magnify the effect of key motivators for KS are public displays and advertisement of valuable contributions, influencers status displays, multiple feedback and recognition channels available to users or creation of safe environments where professionals can freely exchange ideas without compromising professional reputation and/or losing face. Our study shows that healthcare professionals will be motivated toward KS not only if they anticipate reputation gains and if their sense of self-efficacy is nurtured but also if they feel psychologically safe regarding the risk of losing face and/or reputation, which suggests that there needs to be a trade-off or balance between instances for public acknowledgment or display of contributions and instances where anonymity or low-profile exchanges should prevail.

Limitations and future research directions. While the findings are generally supportive of our research hypotheses, some limitations need to be acknowledged. In what future work is concerned, our study opens up several research directions. First, our study is based on a survey and not able to capture how KS would evolve with time; longitudinal studies might be more useful in understanding this process. Second, future studies may consider knowledge workers from other professions such as lawyers or academics, and/or other cultural contexts to enhance generalizability. Also, comparative studies of different professions can yield results that would increase the robustness of the findings. Third, we considered but a few individual culture-specific factors; future studies can include other such elements and also profession-specific variables that can influence KS practices. Fourth, it is clear from our findings that the nature of incentive that motivates KS on the Web is mostly social and psychological (not financial); hence, future studies could explore other social and psychological rewards such as respect, trust, status and recognition. Finally, the data for this study was collected from physicians from different organizations; studied with larger, more representative samples can examine the extent to which our model and findings apply to healthcare professionals in an organizational setting.

Conclusion

We examined the use of Web 2.0 among 207 healthcare professionals across India to develop and test an integrated model of KS. We investigated the impact of face, reputation and rewards on the phenomenon of KS, specifically exploring their roles in the relationship between attitude toward KS and intention to share knowledge. We draw upon the TRA, attitude-intention relationship and the factors influencing this relationship and integrate them into a single model. The study contributes by highlighting the importance of contextual, cultural factors in explaining the aspects of KS, extending both descriptive and predictive value. The study explicitly emphasizes the importance of non-tangible rewards that solicits KS using Web 2.0.

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