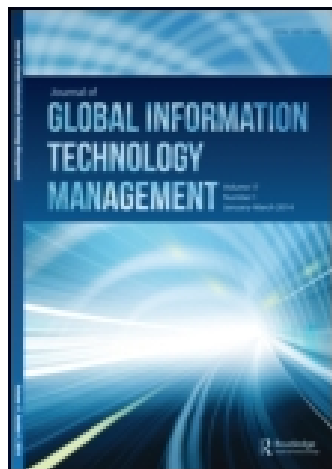


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Which Factors Influence the Adoption of Social Software? An Exploratory Study of Indian Information Technology Consultancy Firms

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The rationale behind traditional knowledge management initiatives is to create, capture, share, organize, and use intangible assets such as organizational knowledge. Information systems have been playing a vital role in the implementation of knowledge management practices and systems. Recently, organizations are adopting new forms of information and communication technologies such as social software to encourage employees to create and share knowledge. This article explores the adoption of social software tools by Indian knowledge workers working for information technology consultancy firms. A mixed method approach has been applied, and drawing on social dilemma theory and Hofstede's cultural theory, this study discusses the factors affecting the adoption of social software by knowledge workers. A quantitative descriptive-explanatory study and a qualitative exploratory study have been employed to gather data from Indian organizations. It was found that even though information technology consultancy firms are at the forefront of deploying social software, the active use of these tools is rather limited among knowledge workers. The present study sheds light on both personal and organizational factors that hinder the adoption of such tools. Finally, on the basis of these research findings we aim to contribute to managerial implications for organizations wishing to adopt social media.

Keywords: Indian Information Technology Firms, Knowledge Management, Social Software, Web 2.0

INTRODUCTION

The newer forms of information and communication technologies (ICT), such as Web 2.0 (also known as social software), facilitate user participation, communication, interaction, and collaboration on the web. Social software has been growing rapidly on the internet, and more recently it has also been leveraged into organizations. Social software is not only designed to capture and distribute knowledge, but also to provide the conditions under which knowledge is shared and

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new knowledge is created or exchanged in social networks, wikis, or blogs (Kirchner, Razmerita, & Sudzina, 2009). The use of social software in an organizational context has spread and is at present associated with various new terminologies such as enterprise social software (ESS), enterprise social platforms (ESP), Enterprise 2.0, or social business. The social software has resulted in a reinvention of the concept of knowledge management (KM) by offering new possibilities to manage knowledge in organizations as it enables new forms of interaction, collaboration, and knowledge sharing. Organizations have entered into the second phase of KM, also known as KM 2.0, which is assumed to be people-centric rather than document-centric. In contrast to traditional KM, where the objective was to capture, share, and organize knowledge, the Web 2.0 technologies enable a new model of managing knowledge that involves formal and informal communication, collaboration, and social networking. At the same time this model allows us to manage knowledge at both personal and organizational levels, facilitating knowledge sharing, and virtual interaction through easy-to-use collaborative tools (Razmerita & Kirchner, 2011; Razmerita, Kirchner, & Nabeth, 2014).

In order to reap the benefits of the social dimension of Web 2.0 tools, organizations have started deploying these tools as KM initiatives. In general, knowledge sharing occurs in organizations either through capturing explicit knowledge or sharing tacit knowledge through interpersonal interaction and social relationships. Therefore, KM systems (KMS) should be designed to connect people and facilitate their knowledge sharing processes (Lang, 2001). A characteristic feature of any Web 2.0 tool or social software is its sharing facility. Whether the tool is a blog, a wiki, or a social networking site, its main purpose is to share knowledge and facilitate collaboration (Avram, 2006). Moreover, organizations are deploying these Web 2.0 tools as KM initiatives since various features and principles of Web 2.0 are useful to KM, as argued by Levy (2009). Zhang, Zhu, and Hildebrandt (2008) stated that social software is a “promising area for KM.” Coakes (2006) observes that, with the help of social software, organizations can overcome specific concerns relating to time and space. In addition, he discusses the usefulness of social software such as wikis and blogs etc., in KM.

The motivation for the deployment of tools as KM initiatives is to facilitate knowledge sharing among knowledge workers, but its success depends to what extent the employees are willing adopt the tools. Moreover, according to Stenmark (2008), if organizations are ready to implement Web 2.0 tools, they have to accept the idea that employees will also become owners of information, because information is created and owned by the users (bottom-up approach), which contradicts the traditional view of the organization (top-down approach). Furthermore, according to Von Krogh (2012), many articles discuss the dissemination of social software within and beyond organizations, but only limited attention has been paid to barriers and enablers, such as the employees’ willingness to adopt the technology. Therefore, one of the proposed strategic research agendas of Von Krogh (2012) is to explore the barriers and enablers in organizations for the adoption of KM using social software.

According to Bughin (2008), Chinese and Indian companies are similar to U.S. companies with respect to investment and deployment of social software tools. Software companies or information technology (IT) businesses belong to the early adopters of KM 2.0 (Kirchner et al., 2009).

However, in Indian organizations the interactions of employees are structured in such a way that they mainly facilitate transfer of explicit knowledge and hardly any tacit knowledge (Dayasindhu, 2002). Social software facilitates sharing of both explicit and tacit knowledge of knowledge workers. To date, little research has been conducted related to the adoption

and use of social software by Indian IT consultancies. The authors wish to fill this research gap by investigating the adoption of such tools by Indian knowledge workers and the factors influencing the adoption. In this context, it is especially interesting to investigate employees' adoption and knowledge sharing using Web 2.0 tools in countries like India, which has a society characterized by power distance and an authoritative culture (Hofstede, 1983). Based on contributions of Ardichvili, Page, and Wentling (2003), Paroutis and Al Saleh (2009), and Tohidinia and Mosakhani (2010), and drawing on social dilemma theory (Dawes, 1980; Kollock, 1998) and Hofstede's cultural theory, the primary aim of this research is to explore the following questions:

1. To what extent is social software used by the knowledge workers in Indian IT consultancies?
2. What are the factors that hinder or facilitate the adoption of social software tools by knowledge workers?

The article aims to provide insights into the critical factors influencing the use of social software by taking into account a cost-benefit perspective of knowledge sharing. These findings may help managers seeking to break the barriers of social media use and successfully deploy social media in organizations.

It should be noted that the terms Web 2.0, social media, and social software have been used interchangeably throughout this article. The overall article is structured as follows. In the next section, the theoretical concepts will be introduced. The third section presents the research methodology that was carried out to reach research objectives. In the fourth and fifth sections, we discuss the data analysis based on both quantitative and qualitative methods. In the last section, the conclusions of the study are summarized, followed by a discussion of the managerial implications for organizations.

RELATED WORK

“Social media is a group of internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of User generated Content” (Kaplan & Haenlein, 2010, p. 61). Social media has changed the dynamics of the internet, as people who were initially only consumers of the online content (news and opinions, information) also became creators of the content. This change has taken place because of the shift from the traditional way of transmitting and distributing content to people (broadcast) to people-to-people transmission (Cook, 2008).

Traditional communication software tools such as e-mail, instant messaging, and discussion forums can to a certain degree be classified as social interaction tools. Organizations have been using these software tools for communication and collaboration for quite some time. Recently, Web 2.0 tools commonly referred as social media have also been labeled as social software (Avram, 2006; Zhang et al., 2008; Cook, 2008; Von Krogh, 2012) because these tools support and encourage collaboration, communication, knowledge sharing, and social interactions. Some of the major components of Web 2.0 are blogs, wikis, social networking sites, content communities, and social bookmarking. Since 2005 social media has gained huge popularity due to the creation of social networking sites such as MySpace in 2003 and Facebook in 2004 (Kaplan

& Haenlein, 2010). Moreover, social software has started to be used in many organizations, as reported in many case studies, consultancy reports or scholarly written articles. Cook (2008) and McAfee (2006, 2009) considered the benefits of social software for organizations. Kirchner et al. (2009) discussed knowledge sharing on Web 2.0 and mention the critical success factors for KM 2.0. Denyer, Parry, and Flowers (2011) conducted a study across three business units at Telco regarding the adoption of social software. Furthermore, trust issues are discussed by Chai and Kim (2010), who conducted surveys at two large universities in the United States to investigate the relationship between trust and knowledge sharing practices on blogs, and also considered the managerial implications. Majchrzak, Wagner, and Yates (2013) explained the wiki affordances that overcome the bottlenecks of previous traditional KMS.

Despite increasing importance and attention paid toward the use and adoption of social software platforms/enterprise 2.0, only few researchers so far have focused on the major concerns and challenges in deploying social software tools. Some of the concerns mentioned in the literature are fear of losing control, risk of losing information, security issues, and trust issues regarding employees (Tebbutt, 2006; Gilchrist, 2007; Bennett, Owers, Pitt, & Tucker, 2010; Razmerita et al., 2014). In this context, Aula (2010) argued that when social media is used for corporate communication, it increases the reputation risk. Recent literature discusses the challenges faced by the organizations because of social software. Väyrynen, Hekkala, and Liias (2013) proposed a framework that explains and summarizes a number of knowledge protection challenges and the five characteristics of social media that lead to these challenges. The tensions that may arise between social media and KM when social software is introduced in organizations are examined by Ford and Mason (2013). The perceived tensions are explained by considering four important aspects of the organization: roles, ownership, control and value, and observing three levels of the organization (individual, group, and organizational level). Razmerita et al. (2014) discusses the articulation of personal into collective knowledge using social software and the associated challenges from a personal and organizational perspective. Zhang, De Pablos, and Xu (2014) conducted a mixed-method to investigate the effect of national cultural values on knowledge sharing in a multi-national virtual class. Cultural differences in relation to knowledge sharing were studied comparing students from Beijing, Hong Kong, and The Netherlands. Their findings reveal that cultural values have both direct effects on knowledge sharing and interactive effects with knowledge sharing motivations. The empirical study by Zhang et al. (2013) reveals that in electronic KMS, knowledge sharing visibility is still an important moderator to predict the knowledge sharing behavior of an employee.

To the best of our knowledge, there is no research conducted in Indian context. By conducting this mixed method empirical study, we aimed to address the existing research gap in literature. Especially the present study focuses on the adoption of social media by the Indian IT knowledge workers and investigates the factors that facilitate or hinder the adoption from an employee perspective.

THEORY

Social Dilemma Theory

Organizations strive to nurture the sharing of knowledge, ideas, and experiences among groups or individuals. However, individuals may find themselves in particular situations where individual

rational behavior leads to mediocre or average outcomes from a collective standpoint. These situations are called social dilemmas (Dawes, 1980; Kollock, 1998). One of the social dilemmas is the public good dilemma or “tragedy of commons.” A public good is a resource from which every member of a group can benefit with or without contributing to it. Knowledge contribution to social software platforms can be interpreted as public good, because organizational knowledge accumulates through collective contribution, either with or without participation of individuals. Hence, in this public good situation there might be a chance to free ride without contributing to it, which can ultimately lead to collective damage. According to Cabrera and Cabrera (2002), in an ideal situation employees share their knowledge, but in general, employees do a cost benefit analysis before they do so. If there are costs associated with knowledge sharing, then employees will share less knowledge. But if employees perceive the benefits of sharing their knowledge, then knowledge sharing will increase. If the resulting benefits exceed the costs, then only employees will share their knowledge. Hence, if we view it from the individual employees’ point of view, taking into account social dilemma theory (Kollock, 1998), their rational decisions related to knowledge sharing may lead to collective damage. Costs and benefits are important factors which determine individual behavior in relation to knowledge sharing. Therefore, the same factors are also applicable in the adoption of sharing knowledge using social software tools.

Apart from social dilemma theory, various other studies identify individual/personal, organizational, and technical factors which have an impact on knowledge sharing using ICT, including virtual communities or Web 2.0 tools (Ardichvili et al., 2003; Paroutis & Al Saleh, 2009; Tohidinia & Mosakhani, 2010). In order to evaluate the behavior of users in KMS and, in particular, the level of knowledge sharing and the level of activity and the type of user activity, an ontology-based framework for modeling user behavior has been proposed in (Razmerita, 2011).

Based on a literature review, a critical framework for measuring success factors in KM, including individual/personal, organizational, managerial, and technical factors, is presented in Kirchner et al. (2009). The framework distinguishes four types of factors which may hinder or facilitate the adoption of these tools by the employees, as shown in Figure 1.

Cultural Dimensions

The role of national cultures may also have an impact on organizations and individuals, because managers in different countries behave differently when they face the same challenges (Sanchez-Runde & Steers, 2003). A study by Lai and Lee (2007) emphasizes that “authority culture may act as an inhibitor on achievement of knowledge sharing” (p. 533).

According to Hofstede (1983), India is a centralized power society where the power distance is large with an index score of 80. We can assume that the same power distance also exists in India’s organizations because “management is not a phenomenon that can be isolated from other processes taking place in a society” (Hofstede, 1993, p. 89). Hofstede’s cultural framework includes four cultural variables: power distance, individualism versus collectivism, uncertainty avoidance, masculinity versus femininity.

- Power distance: Power distance is defined as “the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally.” (Dayasindhu, 2002, p. 553).

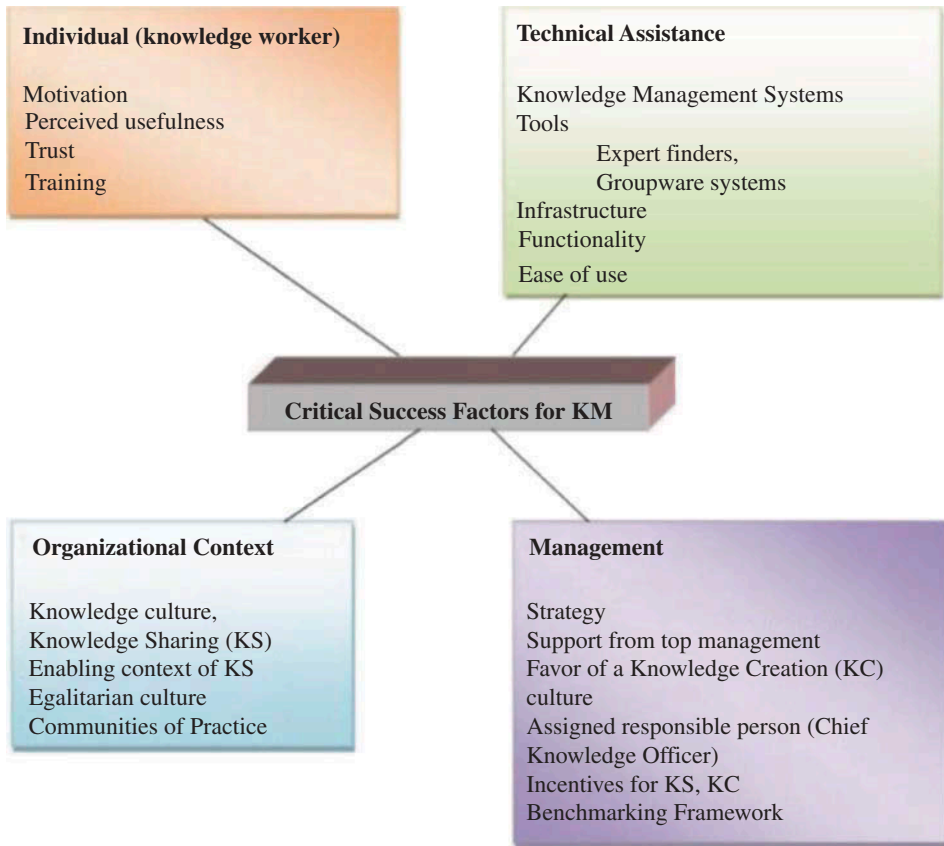


FIGURE 1 Critical success factors for KM in companies (Kirchner et al., 2009).

- Individualism versus Collectivism: Collectivism is a construct that refers to a united, tight social framework, where people who belong to a group expect to look after each other.
- Uncertainty avoidance: Uncertainty avoidance cultures try to avoid uncertain and ambiguous situations.
- Masculinity versus femininity: Masculinity refers to assertiveness and materialism, whereas feminist cultures value concern for others and relationships.

RESEARCH METHODOLOGY AND ANALYSIS

The main focus of this research is to explore the factors affecting the adoption of social software by knowledge workers in Indian organizations. Analyzing India through the lenses of Hofstede’s cultural framework (1983), India can be said to be a collective society where power distance is high, uncertainty avoidance is low and masculinity is high.

The present empirical study employs a mixed method approach consisting of both quantitative and qualitative data to investigate to what extent social software has been adopted by Indian knowledge workers; in addition, it investigates the factors affecting adoption. Since IT organizations are at the forefront of social software adoption, the study aimed to reach as many Indian IT knowledge workers as possible to gather reliable data to answer the above-mentioned research questions.

The data was collected from IT consultants and managers working for Indian IT organizations located all over India. The target population is hard to reach due to the policies and procedures in the organizations. Consequently, we used snowball sampling (Saunders et al., 2009), a non-probability sampling technique, for both quantitative and qualitative data collection. Quantitative data was collected through an online survey and qualitative data was collected through semi-structured interviews.

Quantitative Survey

A closed-ended questionnaire consisting of 24 questions was prepared as a structured online survey. It was posted on Google docs and kept active for one and half months in the spring of 2012. The online survey link was forwarded to knowledge workers in 35 IT consultancies, including MNCs and SMEs. The link to the questionnaire was distributed through several contact persons working for IT firms all over the India; these further forwarded the link to their friends and colleagues.

The questionnaire focused on the socio-demographic background of the respondents, on the patterns of social media usage in both their personal lives and in their professional work environments, and on their opinions of the promotion of the tools in organizations. Some of the questions were based on the theories of social dilemma and Hofstede's (1983) cultural framework (e.g., managerial support, power distance). Taking into account the social dilemma theory (Dawes, 1980; Kollock, 1998), sharing knowledge is a public good and therefore, questions on motivational aspects were formulated. Motivations or reasons for sharing knowledge with the use of these tools are considered as "benefits" and reasons for not sharing knowledge using these tools are considered as "costs."

Quantitative Data Analysis

The total number of knowledge workers who responded to the online questionnaire was 140, but three responses were filtered out as they did not originate from the IT industry. The internal consistency of data was assessed by calculating Cronbach's alpha. The demographic profile of the 137 respondents in relation to their gender, age, years of experience, type of position, and location of their workplace is shown in Table 1. It should be noted that in order to make the sample data suitable for statistical calculations, the senior managers were added to the category of managers; also the respondents from the "other category" are divided into managers and knowledge workers (programmers/developers) based on their designation and number of years of experience.

As indicated in Figure 2, e-mail and instant messaging are still the most frequently used tools in the work environment, that is, by approximately 90% (124/137) and 79% (108/137) of the

TABLE 1
Demographic Profile of Respondents

<i>Characteristics</i>	<i>Frequency</i>	<i>Percentage</i>	<i>Adapted Values</i>
Gender			
Male	123	89.8%	
Female	14	10.2%	
Age			
Less than 25 years	26	19%	
25–34 years	87	63.5%	
35–44 years	23	16.8%	
45–54 years	1	0.7%	
Total years of your experience			
Less than 1 year	5	3.6%	
1–4 years	54	39.4%	
5–10 years	56	40.9%	
10–20 years	20	14.6%	
More than 20 years	2	1.5%	
Type of position			
Programmer/developer	83	60.6%	101 (73.7%)
Manager	23	16.8%	36 (26.3%)
Senior manager	3	2.2%	
Other	28	20.4%	
Location (country)			
India	101	73.7%	
Denmark	8	5.8%	
United States	17	12.4%	
Other	11	8.1%	

Communication and Collaboration Tools

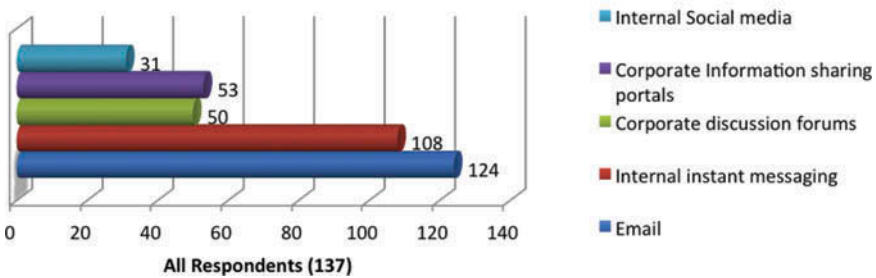


FIGURE 2 Usage of communication and collaboration tools.

respondents, respectively. Internal social media is only used by 23% (31/137) of the respondents for communication and collaboration in their daily work activities.

Based on the ontology-based framework for modeling user behavior (Razmerita, 2011), all respondents were categorized into active and inactive users. As shown in Figure 3, out of a total 137 respondents, only 37% of the respondents are active. Furthermore, both active and inactive

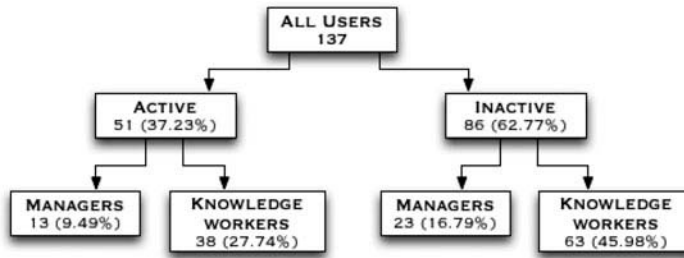


FIGURE 3 Active–inactive users categorization.

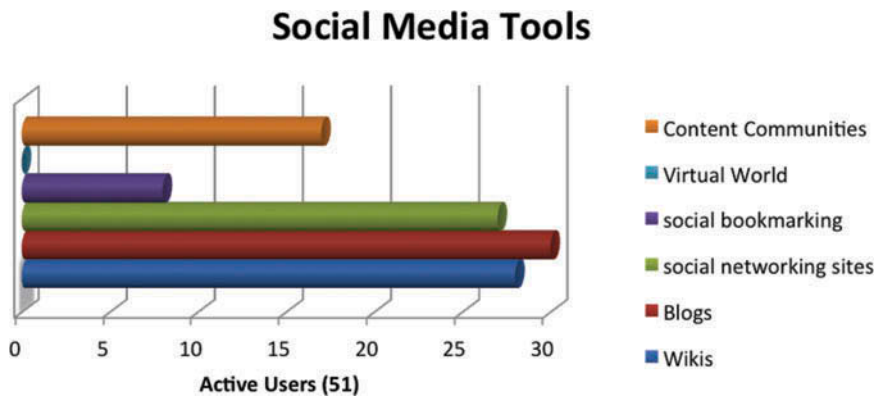


FIGURE 4 Usages of social media tools by active users.

users have been categorized as managers and knowledge workers, based on their position and responsibility.

As indicated in Figure 4, most of the active users use blogs, followed by wikis and social networking sites.

The responses from active users expressed that they use the tools mostly for communication, followed by knowledge sharing and learning. However, from Figure 5 it is clear that the usage of tools for collaboration is relatively low.

Descriptive Statistics and Correlation Analysis

Altogether, we shortlisted 16 statements distributed across four categories of the online questionnaire as independent variables which could influence the dependent variable, “the usage of social media in their professional work.” The independent variables are categorized into benefits, costs, managerial support, and usage in personal life, as shown in Table 2.

As shown in Table 3 the coefficient of variation (CV) is approximately 50%, which indicates relatively more dispersed data values over the mean. In simple terms this means more variation in the responses regarding usage of social media in their office work.

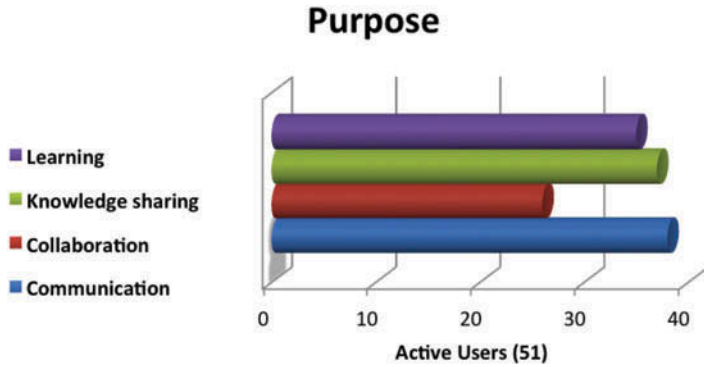


FIGURE 5 Purpose of social media tools—active users.

TABLE 2
List of Dependent and 16 Independent Variables

Dependent variable
Usage of social media in office work
Independent variables
Benefits
B1. To increase my personal knowledge
B2. I like sharing my knowledge
B3. It helps in my promotion and further career growth
B4. It enhances my contacts and networks
Costs
C1. Lack of time
C2. Lack of motivation
C3. Lack of perceived usefulness
C4. Lack of trust regarding information
C5. Knowledge is power and I don't want to share it
C6. Lack of expertise and training
Managerial support
M1. My closest manager contributes
M2. My manager always encourages and gives me feedback
M3. My manager recognizes and values my contributions
M4. My manager allows some of my time to contribute
M5. It is strongly supported by the management
Usage in personal life
P1. Usage of social media in personal life

Mean and CV are calculated for 16 variables and presented in Table 4 as part of descriptive statistics. The CV is from 18–27% for the variables in the benefits category (B1 to B4 in Table 4), the dispersion of the data over the mean is far less; in other words, the responses are more consistent. However, the CV is from 35–46% for variables in the costs category (C1 to C6 in Table 4), and the dispersion is relatively higher. Finally, in the managerial support category (M1

TABLE 3
Usage of Social Media in Office Work

<i>Dependent Variable</i>	<i>Mean (M)</i>	<i>CV %</i>	<i>Remarks</i>
Usage of social media in office work	3.02	47.05	

Note. Scale: 1 = never, 2 = perhaps sometimes, 3 = monthly, 4 = weekly, 5 = almost daily;
CV = coefficient of variation = (standard deviation/mean) × 100.

TABLE 4
Mean, CV, and Correlation of Independent Variables:
Benefits (B), Costs (C), Managerial Support (M), and Personal Life (P)

<i>Independent Variables</i>	<i>Mean (μ)</i>	<i>CV %</i>	<i>P</i>
B1. To increase my personal knowledge	4.06	18.84	0.25**
B2. I like sharing my knowledge	3.99	21.94	0.23**
B3. It helps in my promotion and further career growth	3.64	27.28	0.28**
B4. It enhances my contacts and networks	4.16	18.26	0.31**
C1. Lack of time	3.24	35.01	0.00
C2. Lack of motivation	2.70	38.46	0.13
C3. Lack of perceived usefulness	2.65	37.90	0.19*
C4. Lack of trust regarding information	2.83	36.48	0.07
C5. Knowledge is power and I don't want to share it	1.80	46.03	0.12
C6. Lack of expertise and training	2.29	40.00	0.05
M1. My closest manager contributes	3.21	31.23	0.25**
M2. My manager always encourages and gives feedback	3.20	31.24	0.17*
M3. My manager recognizes and values my contributions	3.28	31.34	0.12
M4. My manager allows some of my time to contribute	3.25	30.74	0.18*
M5. It is strongly supported by the management	3.23	31.67	0.36*
P1. Usage of social media in personal life	4.01	27.15	0.30**

Note. CV = coefficient of variation; ρ = coefficient of correlation;

**Correlation is significant at the 0.01 level (2-tailed);

*Correlation is significant at the 0.05 level (2-tailed).

to M5, in Table 4) the CV is from 30–32%, which means the dispersion of the data above the mean is relatively speaking higher.

By using SPSS statistics software, the correlations were calculated between the usage of social media in professional work and all the other variables in the categories: costs, benefits, managerial support and usage of social software in personal life. In the benefits category (B1 to B4 in Table 4), weak correlations were found ($0.23 \leq \rho \leq 0.31$) at a significance level of 0.01 ($p \leq 0.01$). Out of six variables in the costs category (C1 to C6 in Table 4), we found a weak correlation ($\rho = 0.19$) at the significance level of 0.05 for only one variable “lack of perceived usefulness” (C3 in Table 4). But for the rest of the variables in the costs category (C1, C2, C4, C5, C6 in Table 4), the correlations values found to be very low ($\rho \leq 0.13$). In the category of managerial support (M1 to M5 in Table 4), weak correlations ($0.25 \leq \rho \leq 0.36$) were found for two variables (M1, M5 in Table 4) at a significance level of the 0.01 and similarly two other variables (M2, M4 in Table 4) also have weak correlation ($0.17 \leq \rho \leq 0.18$) at the significance level of 0.05. Furthermore,

weak correlation found between the usage of social media in personal life (P1 in Table 4) and the usage of social media in professional life at the significance level of 0.01.

Regression Analysis

In order to assess the strength of the combined effect (relationship) of 16 independent variables on the dependent variable, a multiple regression analysis would be a more suitable statistical measure (Saunders et al., 2009). We have carried such a multiple regression analysis using SPSS statistics software. Before carrying out regression analysis, we conducted tests for non-linearity, multicollinearity, and homoscedasticity to ensure that the sample data is valid and suitable for conducting linear regression.

Initially, we checked the sample data in SPSS software for linearity by using scatterplot between 16 independent variables and dependent variable (Figure 6) and noticed that the sample data is linear and suitable for conducting linear regression.

As a first step, we conducted the regression analysis of the 16 independent variables with the dependent variable. Simultaneously, along with regression analysis, we also conducted multicollinearity analysis to validate the correlations between one or more input variables. The results of the regression analysis are presented in Table 5.

As indicated in Table 5, our findings reveal that, among the 16 independent variables, only three variables have high values of variance inflation factors ($VIF > 3.0$), which indicates the existence of multicollinearity between the three independent variables: my manager always encourages and gives feedback ($VIF = 4.861$), my manager recognizes and values my contributions ($VIF = 4.965$), and my manager allows some of my time to contribute ($VIF = 3.535$).

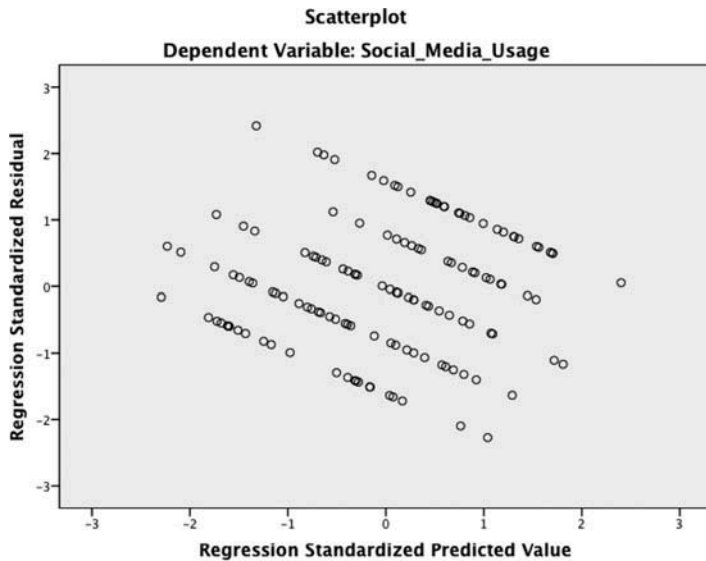


FIGURE 6 Non-linearity—scatterplot for 16 independent and dependent variables.

TABLE 5
Regression Analysis of 16 Independent Variables

<i>Model Summary^b</i>								
<i>Model</i>	<i>R</i>	<i>R-Square</i>	<i>Adjusted R-Square</i>	<i>Standard Error of the Estimate</i>				
1	0.560 ^a	0.313	0.222	1.254				
<i>ANOVA^b</i>								
<i>Model</i>	<i>Sum of Squares</i>	<i>Df</i>	<i>Mean Square</i>	<i>F</i>	<i>Significance</i>			
Regression	86.145	16	5.384	3.422	0.000 ^b			
Residual	188.789	120	1.573					
Total	274.934	136						
<i>Coefficients^b</i>								
		<i>Unstandardized Coefficients</i>	<i>Standardized Coefficients</i>	<i>Collinearity Statistics</i>				
<i>Model</i>		<i>B</i>	<i>Standard Error</i>	<i>Beta</i>	<i>T</i>	<i>Significance</i>	<i>Tolerance</i>	<i>VIF</i>
1	(Constant)	-2.149	1.003		-2.142	0.034		
	Lack of time	-0.136	0.117	-0.108	-1.157	0.250	0.651	1.536
	Lack of motivation	0.009	0.146	0.007	0.064	0.949	0.504	1.983
	Lack of perceived usefulness	0.387	0.156	0.273	2.479	0.015	0.471	2.122
	Lack of trust info	-0.022	0.133	-0.016	-0.166	0.869	0.612	1.633
	I don't want to share	0.057	0.151	0.033	0.377	0.707	0.740	1.351
	Lack of expertise training	-0.053	0.144	-0.034	-0.371	0.712	0.667	1.498
	Increase my personal knowledge	0.043	0.180	0.023	0.239	0.811	0.613	1.630
	I like sharing my knowledge	0.040	0.159	0.025	0.251	0.802	0.599	1.671
	Helps in my promotion	0.083	0.151	0.058	0.551	0.583	0.518	1.929
	Enhances my contacts	0.285	0.173	0.152	1.648	0.102	0.673	1.486
	Closest manager contributes	0.151	0.164	0.107	0.924	0.357	0.428	2.339
	My manager encourages	-0.249	0.237	-0.175	-1.050	0.296	0.206	4.861
	My manager recognizes my contributions	0.067	0.233	0.049	0.289	0.773	0.201	4.965
	My manager allows time	0.134	0.203	0.094	0.660	0.510	0.283	3.535
	Strongly supported by management	0.330	0.150	0.237	2.208	0.029	0.495	2.021
	Usage social media in personal life	0.353	0.106	0.270	3.336	0.001	0.874	1.144

^aPredictors: (Constant), usage social media in personal life, my manager allows time, I don't want to share, lack of time, enhances my contacts, lack of trust info, increase my personal knowledge, lack of expertise training, I like sharing my knowledge, helps in my promotion, lack of motivation, closest manager contributes, strongly supported by management, lack of perceived usefulness, my manager encourages, my manager recognizes my contributions;

^bDependent variable: Social media usage.

The remaining variables have low VIF values ($VIF < 3.0$) which indicates absence of multicollinearity in the rest of 13 independent variable. Therefore, in the second round of regression analysis, we eliminated the redundancy by excluding two independent variables (M2 and M4) and kept the independent variable (M3), which represents on behalf of all the three variables. The *R*-square and adjusted *R*-square values for the 16 independent variables are 0.313 and 0.222, respectively as indicated in Table 5.

In the second round, we performed regression analysis for the 14 independent variables. The results are presented in Table 6. The values of *R*-square and adjusted *R*-square for the 14 independent variables are 0.305 and 0.226, respectively. Furthermore, we noticed that, out of 14 independent variables, the significance level for some of the variables is large ($0.975 \geq p \geq 0.1$), which indicates that there is higher probability of these variables happened by chance.

Therefore, in the third round, we performed a stepwise regression analysis on the 14 independent variables to eliminate the variables with larger values of significance level. As indicated in results of the stepwise regression analysis (Table 7), values of *R*-square and adjusted *R*-square for the four independent variables (B4, C3, M5, P1 in Table 2) are 0.283 and 0.261, respectively.

In comparison to the results from all rounds of regression analysis, we can notice that the effect of all 16 independent variables (Table 5) together accounts for 31.30% (adjusted *R*-square 22.2%) of the variance in the dependent variable, whereas all 14 independent variables (Table 6) together contribute 30.5% (adjusted *R*-square 22.6%) of the variance in the dependent variable. However, in the stepwise regression analysis (Table 7), the combined effect of four main independent variables: lack of perceived usefulness, it enhances my contacts and networks, it is strongly supported by the management, and social media usage in personal life contribute to 28.30% (adjusted *R*-square 26.10%) of variance in the dependent variable. Out of the total variance of 31.30% by the 16 independent variables, the four main independent variables account for 28.30% of the variance, whereas the other 12 independent variables contribute to only 3% of the variance in the usage of social media. This shows that the four independent variables have a strong relationship with the dependent variable.

Finally, as part of the stepwise regression analysis, we have also conducted test for homoscedasticity to make sure that variance of the errors is uniform across variables. The calculated values for Breusch–Pagan test and Koenker test for heteroscedasticity for the sample data are 2.017 and 2.436, respectively and their corresponding values for significance level of Chi-square are 0.7327 and 0.6561. Since the calculated values of Breusch–Pagan test ($2.017 \geq 0.7327$) and Koenker test ($2.436 \geq 0.6561$) for heteroscedasticity are significantly larger than their respective Chi-square values, we cannot reject the null hypothesis assuming homoscedasticity of sample data. Therefore, we can conclude that the sample data is homoscedastic.

Promotion of Social Media

The respondents stated that promotional activities for social software are essential in their organizations. The most important factors for the promotion of social media are having a good strategy along with top management support, incentives, a chief knowledge officer, and enabling context for knowledge sharing. As shown in Table 8, the CV is between 25 and 28%, which indicates that the dispersion of the data over the average values is very low.

TABLE 6
Regression Analysis of 14 Independent Variables

<i>Model Summary^b</i>							
<i>Model</i>	<i>R</i>	<i>R Square</i>	<i>Adjusted R Square</i>	<i>Standard Error of the Estimate</i>			
1	0.553 ^a	0.305	0.226	1.251			
<i>ANOVA^a</i>							
<i>Model</i>	<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig.</i>		
Regression	83.963	14	5.997	3.831	0.000 ^b		
Residual	190.972	122	1.565				
Total	274.934	136					
<i>Coefficients^b</i>							
<i>Model</i>	<i>Unstandardized Coefficients</i>		<i>Standardized Coefficients</i>		<i>Collinearity Statistics</i>		
	<i>B</i>	<i>Standard Error</i>	<i>Beta</i>	<i>T</i>	<i>Sig.</i>	<i>Tolerance</i>	<i>VIF</i>
(Constant)	-1.875	0.973		-1.926	0.056		
Lack of time	-0.141	0.117	-0.112	-1.201	0.232	0.652	1.534
Lack of motivation	0.012	0.144	0.009	0.084	0.933	0.511	1.955
Lack of perceived usefulness	0.363	0.153	0.256	2.365	0.020	0.485	2.061
Lack of trust info	-0.036	0.132	-0.026	-0.273	0.785	0.619	1.616
I don't want to share	0.063	0.149	0.037	0.420	0.675	0.748	1.337
Lack of expertise training	-0.069	0.142	-0.045	-0.487	0.627	0.679	1.473
Increase my personal knowledge	0.046	0.178	0.025	0.259	0.796	0.620	1.613
I like sharing my knowledge	0.035	0.158	0.022	0.223	0.824	0.600	1.666
Helps in my promotion	0.065	0.149	0.045	0.432	0.666	0.525	1.904
Enhances my contacts	0.265	0.168	0.142	1.581	0.116	0.710	1.408
Closest manager contributes	0.099	0.146	0.070	0.681	0.497	0.537	1.864
My manager recognizes my contributions	-0.005	0.149	-0.003	-0.031	0.975	0.495	2.021
Strongly supported by management	0.346	0.147	0.249	2.359	0.020	0.513	1.950
Usage social media in personal life	0.355	0.105	0.272	3.392	0.001	0.888	1.126

^aPredictors: (constant), usage social media in personal life, helps in my promotion, lack of perceived usefulness, closest manager contributes, I don't want to share, enhances my contacts, lack of time, lack of expertise training, increase my personal knowledge, lack of trust info, I like sharing my knowledge, strongly supported by management, lack of motivation, my manager recognizes my contributions;

^bDependent variable: social media usage.

Summary of Quantitative Analysis

On the whole, social media is used more in personal life than for professional purposes. The most widely used tools by respondents in their organizations are still e-mail and instant messaging.

TABLE 7
Stepwise Regression Analysis of 14 Independent Variables

<i>Model Summary^e</i>								
<i>Model</i>	<i>R</i>	<i>R-Square</i>	<i>Adjusted R-Square</i>		<i>Standard Error of the Estimate</i>			
1	0.361 ^a	0.130	0.124		1.331			
2	0.468 ^b	0.219	0.207		1.266			
3	0.501 ^c	0.251	0.234		1.244			
4	0.532 ^d	0.283	0.261		1.222			
<i>ANOVA^e</i>								
<i>Model</i>		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Significance</i>		
1	Regression	35.826	1	35.826	20.227	0.000 ^b		
	Residual	239.109	135	1.771				
	Total	274.934	136					
2	Regression	60.159	2	30.080	18.767	0.000 ^c		
	Residual	214.775	134	1.603				
	Total	274.934	136					
3	Regression	69.001	3	23.000	14.854	0.000 ^d		
	Residual	205.934	133	1.548				
	Total	274.934	136					
4	Regression	77.820	4	19.455	13.028	0.000 ^e		
	Residual	197.114	132	1.493				
	Total	274.934	136					
<i>Coefficients^b</i>								
<i>Model</i>		<i>Unstandardized Coefficients</i>		<i>Standardized Coefficients</i>		<i>Collinearity Statistics</i>		
		<i>B</i>	<i>Standard Error</i>	<i>Beta</i>	<i>T</i>	<i>Sig.</i>	<i>Tolerance</i>	<i>VIF</i>
1	(Constant)	1.401	0.378		3.709	0.000		
	Strongly supported by management	0.502	0.112	0.361	4.497	0.000	1.000	1.000
2	(Constant)	-0.150	0.536		-0.279	0.780		
	Strongly supported by management	0.500	0.106	0.359	4.708	0.000	1.000	1.000
	Usage social media in personal life	0.389	0.100	0.298	3.896	0.000	1.000	1.000
3	(Constant)	-0.802	0.594		-1.351	0.179		
	Strongly supported by management	0.500	0.104	0.360	4.792	0.000	1.000	1.000
	Usage social media in personal life	0.383	0.098	0.293	3.909	0.000	0.999	1.001
	Lack of perceived usefulness	0.254	0.106	0.179	2.390	0.018	0.999	1.001
4	(Constant)	-1.941	0.748		-2.595	0.011		
	Strongly supported by management	0.412	0.109	0.296	3.786	0.000	0.888	1.126

(Continued)

TABLE 7
(Continued)

Model	Coefficients ^b					Collinearity Statistics	
	Unstandardized Coefficients		Standardized Coefficients		Sig.	Tolerance	VIF
	B	Standard Error	Beta	T			
Usage social media in personal life	0.353	0.097	0.270	3.629	0.000	0.982	1.018
Lack of perceived usefulness	0.274	0.105	0.193	2.615	0.010	0.993	1.007
Enhances my contacts	0.359	0.148	0.192	2.430	0.016	0.870	1.150

^aPredictors: (constant), strongly supported by management.

^bPredictors: (constant), strongly supported by management, usage social media in personal life.

^cPredictors: (constant), strongly supported by management, usage social media in personal life, lack of perceived usefulness.

^dPredictors: (constant), strongly supported by management, usage social media in personal life, lack of perceived usefulness, enhances my contacts.

^eDependent variable: social media usage.

TABLE 8
Factors Influencing Promotion of Social Media

Promotion of social media	Mean (μ)	CV %
1. Having a good strategy along with top management support	3.70	28.16
2. Incentives for knowledge sharing and knowledge creation	3.54	27.85
3. Assigned responsible person is important (chief knowledge officer)	3.64	27.45
4. Creating an enabling context for knowledge sharing	3.72	25.20

Scale: 1 = strongly disagree, 2 = disagree, 3 = cannot say, 4 = agree, and 5 = strongly agree;

CV = coefficient of variation = (standard deviation/mean) \times 100.

The regression analysis showed that out of 16 independent variables, only four variables affect significantly the usage of social media in office work. These four variables, Lack of perceived usefulness; It enhances my contacts and networks; It is strongly supported by the management; and Social media usage in personal life altogether accounted for 28.30% of the variance in usage of social media in office work. It indicates that there are certain unknown variables (not covered in this study), that could affect the rest of the 72% of variance in usage of social media, which could be organizational culture, trust issues, rigid policies, and procedures.

Qualitative Data Analysis

During the qualitative data collection, 13 semi-structured interviews were conducted at the end of April and May 2012. A thorough interview guide was prepared with several iterations. The

interview guide mainly focused on the perceptions of knowledge workers of social software. For example,

Have social media tools spread in your company? Do you use social media tools on a daily basis? Are managers using it or not? What kind of strategy is used by the management regarding social software? Are there any incentives for employees using social media tools in your organization? How are employees encouraged by the managers?

The interviews were conducted with respondents who belong to different hierarchical levels in the organizations (managers and developers). This approach sheds light on the discrepancies between the motivational perceptions of employees and managers in general, and also inflexible hierarchical structure (Saraswat, 2012).

The interviews were conducted both face to face and via telephone, as the respondents were located in different parts of India. Few of the interviewees previously had worked abroad on onsite projects. The interviews on average lasted 40 minutes. They were subsequently transcribed and analyzed using Nvivo. A summary of the 13 interviews is presented in [Table 9](#).

After the preliminary analysis, authors realized that the usage of social software is very limited. Out of 13 interviewees, only two were active contributors and some were merely visitors. The authors noticed that in spite of having a positive opinion of the social software and using it in their personal lives, employees have not adopted it in their professional environment. Consequently, we analyzed the data and explored the factors which explained why the employees are not using social software in organizations.

Based on the data analysis, the major barriers toward the adoption of social software are time, incentives and recognition, quality of information, top management support and strategy, and motivation of employees toward social software. Moreover, according to theoretical and empirical findings, the above-mentioned factors can be categorized into both personal and organizational factors. There are discrepancies between managers and employees, which could indirectly explain the trust issues and organizational culture (power distance as well). By using Nvivo both personal and organizational themes were created along with the different associated nodes. The model created using Nvivo is represented in [Figure 7](#).

The main nodes identified were:

1. Lack of time

“In India we have a lot of work load, always busy with day to day work.”

“Busy with day-to-day company work, won’t get time.”

“Order of priority changes due to lack of time, going back to original system.”

2. Lack of incentives and recognition

“Encouragement and recognition are important when I post a topic in the blog. When I don’t get any feedback or comments, I will be demotivated and stop writing.”

“Employees will do wonders when there is an incentive plan, especially monetary benefits.”

“The name itself representing the social nature of the tools means recognition among the community stands first later come the monetary benefits or awards. However, a combination of recognition and monetary rewards would be even better.”

TABLE 9
A Summary of 13 Interviews

<i>Role/Company</i>	<i>Visitor/Contributor</i>	<i>Perceived Usefulness</i>	<i>Opportunities</i>	<i>Challenges</i>	<i>Organizational Support</i>	<i>Highlights</i>
1. Project manager ARC, Ex Dell employee	Contributor	Positive	Platforms to share knowledge, information spreads quickly	Waiting for responses, lack of time, difficult to contribute in smaller teams	Have incentives for the use of social media tools (SMT) in Dell	He is a blogger and shares his ideas
2. People manager, IBM	Visitor	Positive	Easy to use, fast and straight, penetration of information	Push factor; reliability of the information, quality of the information	Incentives at manager's level only	Uses wikis for corporate/technical information, employees don't express their opinions publicly
3. Technical manager, ARC, Ex IBM	Neither visitor nor contributor	Negative	The tools are good when employees are located in different locations	To have a proper strategy	No recognition from managers, No incentives, lack of proper strategy	Why do employees use the tools, if they don't feel the necessity? We can communicate through e-mails, face-to-face meetings or instant messaging
4. Developer, IBM	Visitor, seldom contributor	Positive	Effective way to communicate with co-workers, helps to learn new trends, enhances networks	Quality of the information, waiting for the response lack of interest towards using the SMT	No recognition, no incentives, managers show little interest to use tools	Open platforms, visibility is more, which could be the reason employees don't use them; managers' focus is always assigning and completion of the tasks (conservative mind set of managers)
5. Manager, Cap Gemini	Neither visitor nor contributor	Positive	Knowledge touch points will increase, relationships grow	Until unless the employees won't realize the benefits of the tools, they won't adopt them	No incentives, creating awareness among managers has just started	No social media tools will ever replace email, but only compliments, recognition is important to motivate employees; success stories have to be circulated within the organization
6. Manager Cap Gemini	Neither visitor nor contributor	Positive	Enhances knowledge, helps employees to grow in their career	Managers need to promote continuously	Management has recently started encouraging the use of SMT	Usage of SMT depends on designation and experience; fresher's don't need them
7. Founder Prodigy Systems	Introduced SMT in their organization	Positive	Everyone is on one platform	Quality of information	Very good support from management, linked contributions to performance measures	Productivity of employees will not diminish by introducing the SMT tools; it is a small organization tried to introduce SMT, but failed; still he feels that SMT are quite useful

8. Developer, Cognizant	Visitor	Positive	SMT facilitates information sharing and talent search	These are open platforms (visibility is high), employees hesitate to post	Management has just started encouraging employees	Managers don't use tools; employees use these platforms to get corporate information
9. Developer, Cognizant	Visitor	Positive	Useful to find about corporate information	Due to security issues, employees hesitate to post information, lack of time	Top management communicates through blogs	I prefer to contribute to knowledge databases
10. Developer, Wipro	Neither visitor nor contributor	Negative		Employee productivity might diminish, lack of user-friendliness, lack of time	No support from management, no recognition and incentives	Managers control the visibility of the content, conservative mind-set of managers, employees might misuse incentives
11. Developer, TCS	Neither visitor nor contributor	Negative		Lack of time, no usage in daily work	No support from top management, no incentives	They introduced the tools just for namesake; why should I waste my time when there are no benefits?
12. Senior architect, Ericsson Global India	Neither visitor nor contributor	Neutral		Day to day work pressures, lack of time	No incentives, no top management support	Receiving responses to my contribution is important for my motivation
13. Developer, Ericsson Global India	Neither visitor nor contributor	Neutral	Quick to communicate, to discussions, publish ideas		No top management support, no monetary benefit	

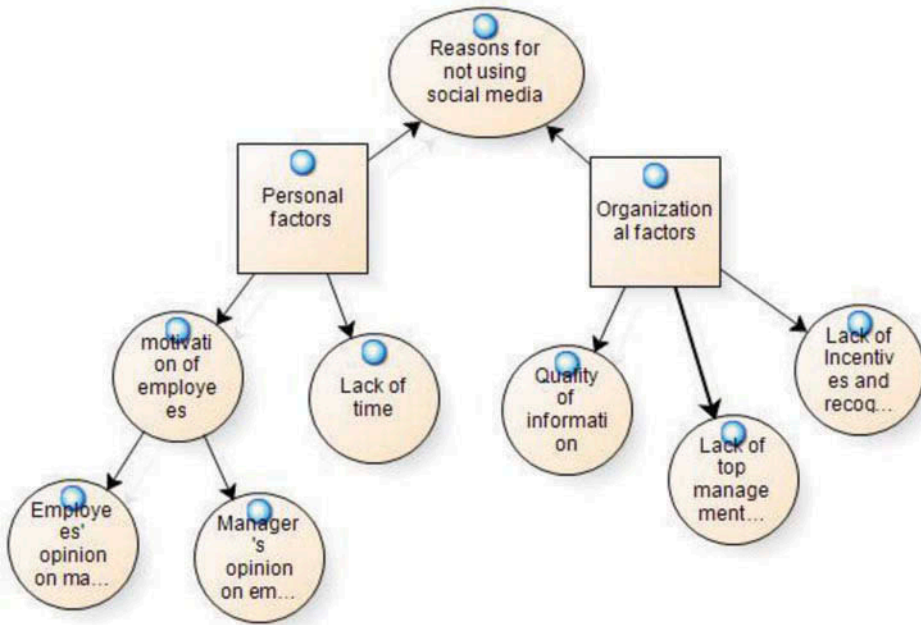


FIGURE 7 Reasons for not using social software.

3. Quality of information

“Quality and reliability of the information are some of the challenges in social media. There is no responsible person to control and validate the content.”

“Responses to questions in blogs may not be accurate and quality of information may not be good as well.”

“When we push employees to contribute to blogs, 70% of the employees’ blogs are ended-up with less quality. Since ours is a small organization, we could not afford a quality manager.”

4. Lack of top management support and strategy

“Top management has a strategy, promotional ideas, and wants to encourage- that is not implemented.”

“Initiatives for promoting social media have just started. Knowledge management teams are sending mails to managers, conducting road shows. Involving managers to drive the force.”

“No top management support.”

5. Motivation of employees toward social software

5.1. Managers’ opinions on their employees’ motivation:

“We introduced Hyderabad wikis, a separate technology forum for project update, monthly update. Encouraged employees by publishing awards, implementation was also good. Initially it was good, but it is not running as expected. (Always employees need follow-up).”

“Push factor: You always need to push employees to use the tools.”

“Employees having experience between one and five years, for them coming to work and do coding itself they feel burden. They have to realize the benefits of the tools.”

“Employees are not interested in using them.”

5.2. Employees opinion on manager’s motivation

“Conservative mindset (of managers), they are only concerned about assigning and completion of the tasks.”

“Managers are not using them either.”

“They (managers) don’t use and always busy in jumping for business.”

6. Perceived usefulness

6.1. Regarding the perceived usefulness of tools we received both positive and negative responses, as listed below:

“I visit our internal wikis to know about the corporate and technical information. They are very easy to use, but I never shared anything.”

“Relationships will increase, personal knowledge will increase, knowledge touch points will increase.”

“Why do we need the social media tools? We already have KM portals and forums. When employees are working in the same place, they can have face to face meetings or can call or e-mail.”

DISCUSSION AND CONCLUSION

Our study aimed to investigate the adoption of social software in Indian IT companies and the factors affecting it. Both quantitative and qualitative methods highlight the fact that the adoption of social software by employees in Indian IT organizations is rather limited, both personal and organizational factors affecting the adoption. The personal factors are perceived usefulness, motivation, and time, while strategy, top management support, quality of information, and incentives are categorized as organizational factors. Both personal and organizational factors hinder the adoption of social software by employees. Past research (Kirchner et al., 2009) has shown that in order to reap the benefits of social software by organizations not only are certain critical success factors important for KM 2.0 but it is also vital to create an appropriate context and an organizational culture (Denyer et al., 2011). Our findings reveal that, as emphasized in the social dilemma theory (Dawes, 1980; Kollock, 1998), sharing knowledge using these tools creates a public good dilemma. Either employees think that they can use the knowledge without contributing to it or perhaps they question the purpose of knowledge sharing using social software tools. Hence there could be a tendency to free ride without contributing, which in turn leads to collective damage.

Social dilemma theory also helps us to understand knowledge workers and their rational decisions in relation to the use of social software tools in order to share knowledge. Unless the benefits perceived by the employees in using social software exceed the costs associated with it, they will not adopt or use these tools regularly. Based on a mixed method approach, our findings reveal that the main costs are lack of perceived usefulness, lack of time, lack of incentives, lack of motivation, lack of trust in quality of information, and lack of strategy and top management support.

These costs seem to exceed the few perceived benefits, such as usage of social media in personal life and it enhances my contacts and networks. Hence, the usage of social software by employees in Indian software firms is rather low. The most widely used tools are still e-mail and instant messaging.

Our research findings have valuable practical implications. The findings can be applied to organizations that are similar to those resembling Indian culture. Organizations that want to reap the benefits of social software should consider both personal and organizational factors. First, management should employ a good strategy that can reach out to the bottom level of employees. Organizations should create a suitable context and culture for employees to share their knowledge with these tools because the organizational culture helps in overcoming the differences in national culture (Jacks, Wallace, & Nemati, 2012). It is essential that organizations should encourage employees by recognizing their contributions and introducing incentives. Our data suggests that introducing incentives and promotional activities could be useful for the adoption of tools. Introducing incentives will motivate employees to share their knowledge within these platforms. When employees perceive the fairness of rewards, then it will help in the development of trust between employee and the organization (Bartol & Srivastava, 2002).

Indian organizations want to exploit the benefits of the social dimension of social software platforms by deploying tools, but adoption of these tools by employees is very limited. Employees are still performing their day-to-day work activities with their established ways of doing things (e-mail and instant messaging). As stated by Paroutis and Al Saleh (2009), "history or the old/established way of doing things appeared to be one of the main barriers to knowledge sharing and collaboration using Web 2.0 technologies" (p. 57).

Furthermore, it is evident that management is passively supportive regarding the use of social software in Indian organizations. If immediate managers start using tools in their daily activities, it will motivate their employees to become active (Brzozowski, Sandholm, & Hogg, 2009). Thus, our findings emphasize that the role of managers is crucial in promoting usage of social software in the Indian organizational context.

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