Promoting the Use of Online Social Technology as a Case-based Learning Tool

Peter Ractham

Department of Management Information System
Thammasat Business School
Bangkok, 10200, Thailand
Peter@tbs.tu.ac.th

Charlie Chen

Walker College of Business
Appalachian State University
North Carolina, 28607, USA
Chench@appstate.edu

ABSTRACT

Social technology is proliferating and influencing different aspects of society. However, very few studies have examined the use of such a technology for a case-based learning pedagogy. This preliminary study investigates the use of social technology as a case-based learning tool to improve the effectiveness of case-based learning in the classroom. A total of 116 students in a public university in Thailand were formed into teams and spent two weeks discussing a Harvard business case via the social technology Edmodo. After the experiment, an online survey was conducted with these participants to assess the efficacy of using Edmodo for solving this case. The Task-Technology Fit (TTF) theory was used to assess the impact of case-based learning and the tasks that the students had to carry out. The findings of this preliminary study suggest that the TTF theory could be used as an effective theory to help better understand not only the user behaviour but also the usefulness of online social technology as a case-based learning tool. However, the theory may not be able to fully capture the complexity of online social technology adoption in the case-based learning context. Theoretical and practical implications are drawn from the findings of this preliminary study.

Keywords: Computer assisted education, Social networking, Educational software

1. INTRODUCTION

An increasing number of educators are considering the use of social media as a pedagogical tool because of its popularity among college students. However, most of these educators are still uncertain as to how to integrate this technology into the management curriculum in order to help students improve their understanding of business cases (Khadijah, Rahman, and MohdNasir, 2011). Online social technology is embedded with four primary technical features: sharing, grouping, conversation, and relationships (Hu and Gollin, 2010). These features correspond with four essential elements of case-based learning, which are sharing knowledge, learning in groups, constantly exchanging information with other group members, and building constructive relationships (Chen, Chen, and Kinshuk, 2009). If used properly, social technology could be an effective tool to help students acquire skills in analytical and diagnostic thinking, develop strong persuasive skills, and make

decisions under conditions of uncertainty (Hackney, McMaster, and Harris, 2003; Lee et al., 2009). Educators can also benefit by using social technology to reach more case-based learners. In order to realize the potential of using social technology, educators and administrators need to first promote its use for case-based learning. In the meantime, they need to assess the efficacy of this technology in case-based learning applications.

The primary purposes of this preliminary study are to (1) understand users' perceived usefulness of social technology for case-based learning and (2) assess the potential impact of it on users' case-based learning performance. Goodhue and Thompson (1995) suggest that information technology is more likely to have a positive impact on users' performance and usage if the capabilities of the information technology match the tasks that the users must carry out. Therefore, this study will adopt the task-technology fit perspective to examine how these four technical features, sharing, grouping, conversation, and relationships, would contribute

to the use of social technology for case-based learning. The aim of this study is to determine if online social technology is a good fit as an online learning technology for business students to acquire case-based learning skills and knowledge.

Section 2 will first examine literature related to these four technical features or constructs, and pose specific research questions on their potential influence on the use of social technology for case-based learning. Section 3 will discuss the experimental setting, data collection procedure, and data analysis methods. Section 4 will present the results from the data analysis to answer the proposed research questions. The remaining sections will present study limitations and proposed future research, as well as scholarly and practical implications.

2. LITERATURE REVIEW

2.1 Social Capital and Case-Based Learning
Social capital is the actual and virtual resources accumulated via the social networks or relationships among people (Coleman, 1988). The more social capital that is available in an online community, the more the members will contribute to it. Because social capital is a cause and effect phenomena (Williams, 2006), the increase of it relies on the mutual support among the members to produce positive social outcomes (e.g. trust, shared information, self-esteem) (Adler and Kwon, 2002). Although social capital underpins the success of online social networks, developing it effectively remains a challenge for many online communities.

Social capital cultivation is particularly important for the success of case-based learning, an important element of management education. In a face-to-face environment, students have plenty of opportunities to interact with each other, with their team members, guest speakers, and their instructor. Before each class discussion, students need to study the facts related to the particular business case, and define the problems faced by the different/various stakeholders involved in it. Intensive discussions can help expose each student to diverse ideas and provide the brainstorming process with new and useful ideas to solve business problems. The instructor often plays a facilitating role by having students or student teams play the protagonist role and by leading constructive discussions on readily solving business problems. All these opportunities available in the traditional setting can help develop social capital in the classroom and enhance the effectiveness of management education.

2.2 The Perceived Usefulness of the Relationship-Building Feature of Social Technology by Case-Based Learners
Case-based learning is a widely accepted pedagogy in business schools. For it to be successful in a classroom learners need to be able to communicate, converse, and exchange their ideas in order to solve business problems effectively. Although there are various types of learning/course management systems such as Blackboard and Moodle that have different features to enhance the learning process and increase students' collaboration, most of these tools are still lacking the social networking features that allow their users to freely communicate and collaborate

in a socially constructed manner (DeSchryver, et al., 2009). Thus, the use of an online social technology site to build, promote, and foster the relationship amongst users could be very useful for case-based learning in a classroom (Voigt and MacFarlane, 2010).

Online social technology can enhance networking between students who are working in an online group as well as foster relationships amongst them since they are working together for the same common goal. In addition, it may be an effective medium to help deliver quality case-based instruction because it inherently supports social interactions (Khadijah et al., 2011). Bandura (1977) suggests that social interactions could be essential to the social learning process because students learn from each other via observation, imitation, and modelling. Thus, the available features of online social technology have the potential to improve social interactions both inside and outside the classroom. Therefore, the following question is proposed:

> Question 1: Do case-based learners consider online social technology an appropriate case-based learning tool because of its relationship-building feature?

2.3 The Perceived Usefulness of the Sharing Feature of Social Technology by Case-Based Learners
Edmodo is a web-based online social technology site, which allows students and instructors to post materials, share links and videos, and access class assignments, grades, and notices. Instructors and students can also store and share digital content such as links, pictures, video, documents, and PowerPoint presentations on it. Although the features available to Edmodo's users are akin to other various Learning Management Software (LMS) and Course Management Systems (CMS), the Edmodo interface and features, such as tagging and sharing information within selective groups, represent some of the unique social networking aspects of the site. The emergence of online social technology provides great opportunities to enrich case-based learning because it enables more learners to exchange information and share knowledge at any time and from any place (Buendía-Garcia et al., 2004). The process of learning through information and knowledge exchanges could lead to an increase in social capital within the online community (Rambe, 2011). As the social capital accumulates, more users will perceive online social technology as an appropriate technology to use and improve their understanding of business cases. Therefore, the following research question is proposed:

> Question 2: Do case-based learners consider online social technology an appropriate case-based learning tool because of its sharing feature?

2.4 The Perceived Usefulness of the Grouping Feature of Social Technology by Case-Based Learners
The flexibility of learning within the group context can expose students to more diverse viewpoints, ideas, and opinions. If managed properly, more, newer, and better ideas shared by group members can lead to better solutions to resolve the business problems related to the business case (Koo, Wati and Jung, 2011). However, in order to utilize

online social technology as an effective case-based learning tool, an instructor needs to remove some of the barriers to its implementation. One barrier is the absence of existing social capital in a newly established class. This barrier can result in a lack of group cohesion. One way to remove the barrier is to have the instructor ask each group member to post an introduction on the group page. Also, information about a student's behaviour and contributions (e.g., the number of posts, posting frequency, comments, and feedback) to each online group discussion can be recorded and tracked over time (Brady, Holcomb, and Smith, 2010). With online social technology, students can use different features such as the Community Support features where students can seek advice from other students who are not from the same group. Also, students can use project management features such as Calendar to set up appointments to collaborate online with other groups. Thus, group members can use the information shared by others to help them distinguish good ideas from bad ones. Therefore, our third question is proposed:

> Question 3: Do case-based learners consider online social technology an appropriate case-based learning tool because of its grouping feature?

2.5 The Perceived Usefulness for the Conversational Feature of Social Technology by Case-Based Learners

Students are motivated to engage in online discussion not only to learn more about business cases and related business concepts, but also to earn a good grade (Su et al., 2005). A poorly designed grading rubric may create confusion amongst students and thus discourage them from participating in case-based learning. A fair assessment of contributions (e.g., the number of posts and information quality of each post) can help the average students avoid feeling intimidated and overwhelmed by more active discussants. An instructor may also have difficulty in providing a prompt personal response to every comment posted by students. Some students may feel isolated and ignored when their questions are disregarded or responded to late. Despite these challenges, online social technology enables students to share ideas, work in groups, converse with each other, and build relationships (Falloon, 2011). These characteristics indicate that the online social technology's group discussion feature is potentially a fit tool for case-based learning. Students can use this feature to discuss various topics as well as to get personal responses from their instructor, and their fellow students. This leads to the following question:

> Question 4: Do case-based learners consider online social technology an appropriate case-based learning tool because of its conversational feature?

2.6 Improving Individual Learning Performance in Case-Based Learning via Online Social Technology

Information technology is more likely to have a positive impact on individual job performance and be utilized if its capabilities match the tasks that the user must perform/carry out. Task-technology fit (TTF) measures are strong predictors of individual (Goodhue et al., 1995) and group

(Zigurs et al., 1999) job performance and information technology (IT) utilization.

Transfer of learning is the study of whether an individual is able to transfer learning from one context to another that has similar characteristics (Thorndike and Woodworth, 1901). Knowledge transfer is successful if the learner can use the acquired knowledge to solve routine and novel problems (Perkins and Salomon, 1992). Student projects, such as case reports, require that each team in a class propose different solutions to resolve practical problems. To properly assess the range of content knowledge learned by students, they need to answer not only simple questions (e.g., facts about the case and major problems), but also sophisticated ones (e.g., suggest solutions as a protagonist). Simple questions help assess the reading comprehension of students, whereas challenging questions assess skills such as research and critical analysis. Similar responses among student groups are often expected to simple questions. On the contrary, it is normal to receive completely different answers to complicated questions. Thus, we posit that by increasing learners' perceived TTF they are more likely to improve their performance in case-based learning. This leads to the following question:

> Question 5: Do case-based learners improve their learning performance if they consider the use of social technology for case-based learning useful?

3. METHODS

3.1 Participants and Setting

A field experiment was conducted because of its ability to gain insights into the effectiveness of instructional methods (Asher, 1976). The exploratory nature of the study required that the variables (e.g., interaction modes and usage patterns) under investigation be carefully observed and interpreted. The setting for the field experiment was four introduction to Management Information Systems classes offered by a public university in Thailand. A total of 116 students in the university's College of Business were invited to spend 14 days reading and discussing the Harvard business case "Apple Inc." on the social site Edmodo (http://www.Edmodo.com). Edmodo is an online social technology site, which allows the instructor to control course materials, learning content, and evaluation criteria to the same extent in all four classes. A professional translator was used to translate the English materials into Thai. The instructor covered/expounded the four learning phases to all participants in these four classes. The participants were introduced and the nature of the study was explained. The four learning phases were: (1) introduction of Edmodo and case-related concepts, (2) student case analysis, (3) output generation and discussions, and (4) follow-up and evaluation. A survey was conducted to understand the influence of social and affective factors on subjects' intention to use the online social technology as a case-based learning tool. For output generation and discussions, we monitored the usage behaviour (e.g., the number of messages posted, comments and responses, and the frequency of access) on Edmodo and assessed how the subjects utilized the technology on the given tasks. For follow-up and

evaluation the students took a quiz with open-ended questions that was graded based on the teaching guidelines provided by/in the case manual.

4. DATA ANALYSIS

4.1 Demographics
The demographic profiles are presented in Table 1. In total, we collected 116 surveys from the respondents. Although all students in this study had some experience using Edmodo, they had not used it as a case-based learning tool. Therefore, prior experience had little impact on the users' learning performance and perceived usefulness of case-based learning.

Features	Numbers	Percent
Gender		
Male	41	35.34%
Female	75	64.66%
Major		
Accounting	71	55.04%
Management Information System	0	0%
Marketing	19	14.73%
Finance	36	27.91%
International Business, Logistics and Transportation	3	2.33%
Human Resources	0	0%
Real Estate	0	0%
Operation Management	0	0%
Experience in using online Social Networking Sites such as Facebook, Hi5, Twitter, YouTube		
Less than 1 year	5	4.31%
1 to 2 years	32	27.59%
2 to 3 years	30	25.86%
3 to 4 years	15	12.93%
4 to 5 years	17	14.66%
More than 5 years	17	14.66%
Experience in using Edmodo		
Less than 1 year	116	100%
Experience in using Edmodo as a case-based learning tool		
YES	116	0%
Experience in uploading photos on Edmodo		
YES	110	95.6%
NO	5	4.4%

Table 1: Demographic Profile

4.2 Reliability of Survey Instrument
Our survey instrument (see Appendix 1) uses a 5-point frequency scale. Five choices were adopted for the questions used to measure the usage frequency of social media for case-based learning (1 "never", 2 "once or twice", 3 "seldom", 4 "regularly", 5 "frequently"). For other questions the Likert scale was as follows: 1 "strongly disagree", 2 "disagree", 3 "neutral", 4 "agree", 5 "strongly agree."

Reliability was evaluated by assessing the internal consistency of the scale constructs using Cronbach's alpha coefficient. An alpha value of more than 0.6 is acceptable. Table 2 summarizes the reliability test results. As shown in Table 2, the reliability for all constructs, other than the sharing construct, demonstrates a satisfactory level of internal consistency (Malhotra, 2007).

Constructs	Cronbach's alpha coefficient
Sharing	0.640
Grouping	0.946
Conversation	0.849
Relationship	0.944
Perceived Task-Technology Fit	0.909
Perceived Performance Impact	0.866
Utilization	0.799

Table 2: Reliability of the Model Constructs

Independent Variable	Standardized Coefficients		
	Beta	t	Sig.*
Constant		15.4	0.878
Sharing Feature	.226	2.314	**0.000**
Grouping Feature	.248	1.272	**0.000**
Conversational Feature	.325	1.629	**0.000**
Relationship-building Feature	.358	1.687	**0.000**
* p < 0.05, R^2 = 0.471			

Dependent Variable: Perceived Task-Technology Fit

Table 3: The Influence of Factors on the Perceived

4.3 Analysis Results
A series of regression analyses were used to examine the relationship between predictors (independent variables) and outcomes (dependent variables). Table 3 contains the regression analysis results for the potential influence of independent variables on dependent variables. The technological characteristics, Relationship-building (β=0.358, p=0.00<0.01), Sharing (β=0.226, p=0.00<0.01), Grouping (β=0.248, p=0.00<0.01), and Conversation (β=0.325, p=0.00<0.01), were found to be positively related to the users' perceived task-technology fit or perceived usefulness of these technical features for case-based learning. These findings indicate that the subjects did perceive the usefulness of social technology for case-based learning because of its four technical features.

Table 4 shows that the users' perceived usefulness for the use of social technology in case-based learning was found positively related to performance impact (β=0.354,

P=0.00<0.01). The results also confirm that when users consider the use of social technology for case-based learning useful they tend to show improved learning performance (Question 5). Table 5 summarizes analysis results for our proposed research questions.

Independent Variable	Standardized Coefficients		
	Beta	t	Sig.*
Constant		0.083	0.934
Perceived Task-Technology Fit	0.354	4.026	**0.000***
* p < 0.05, $R^2 = 0.125$			

Dependent Variable: Performance Impact

Table 4: The Influence of Factors on the Performance Impact of Edmodo

Question	Answer
Question 1: Do case-based learners consider online social technology an appropriate case-based learning tool because of its relationship-building feature?	YES
Question 2: Do case-based learners consider online social technology an appropriate case-based learning tool because of its sharing feature?	YES
Question 3: Do case-based learners consider online social technology an appropriate case-based learning tool because of its grouping feature?	YES
Question 4: Do case-based learners consider online social technology an appropriate case-based learning tool because of its conversational feature?	YES
Question 5: Do case-based learners improve their learning performance if they consider the use of social technology for case-based learning useful?	YES

Table 5: Summary of Answers to Research

5. DISCUSSION

Effective use of online social technology to support case-based learning relies on the cultivation of social factors, such as sharing, grouping, conversation, and relationships in an online community (Hu et al., 2010). Subjects in this study reported that the presence of these social factors could lead to increased users' perceived usefulness in case-based learning, thereby improving individual learning performance. A student commented, "I really like the subgroup feature in Edmodo. I was able form mini-groups and share files and discuss the case with my group members". Another student

also commented, "I wish I could use Edmodo in my marketing class, I like being able to exchange ideas with my group online. I especially like the tag feature where I can share files and URL links with my group".

This finding affirms the importance of social factors in delivering effective e-learning programs in addition to the presence of technical factors (Wu and Hwang, 2010). A closer examination of the four social factors shows that relationship-building has the largest impact on a learner's perceived task-technology fit, followed by conversation, grouping, and sharing features. This finding indicates that all of these four essential elements are inherent in online social technology. Their presence can help enhance learners' perceived task-technology fit. Groups of five students were asked to study business cases via online social technology. To encourage them to spend time and effort in using online social technology, a business case and related course materials were posted on the Library page for students to access. The students reported that the Library was an important feature to initiate the learning process. During this time, they frequently shared notes and assignments with each other. These two features helped them exchange and share knowledge to effectively acquire IT concepts and apply them to solve practical problems related to the business case. Student attitude is a stronger predictor for the use of online social technology than perceived ease of use, perceived usefulness, and subjective norms in the higher education context (Shittu et al., 2011). This study shows that subjects who have a high perception of the usefulness of online social technology in learning business cases can improve their learning performance. This finding corroborates Cane and McCarthy's (2009) previous study demonstrating the importance of increasing the degree of fit between task requirements and technological features in order to increase performance impact.

6. LIMITATIONS AND FUTURE RESEARCH

Although this preliminary study provides insights into the potential usefulness of social technology for case-based learning, it has a few limitations that need to be addressed for any large-scale study in the future. One of the limitations was the limited/restricted sample size and the time-constraint of only having two weeks for the students to participate in this experiment. A longitudinal study (a semester-long course design) may need to be set up in order to better assess the influence of social factors on students' TTF for the use of online social technology for case-based learning, thereby advancing their understanding of business cases. Another limitation is the lack of comparison to a student's performance. A future study could compare the use of social technology with the student's performance as well. A Harvard business case on Apple Inc. was adopted and translated into Thai for students to improve their comprehension. Future research may be able to use this as a surrogate/substitute to measure the efficacy of case-based learning via social technology.

We asked students to self-report their usage of online social technology in a survey. The current version of Edmodo still lacks the ability to track the actual use of the online social technology. Therefore, the real time online

social technology usage was not monitored to reflect its actual use. Students also voiced their preference in using Facebook as a learning tool since they were more familiar with the technology. Using the survey data as a surrogate might not accurately detect the relationship between TTF and online social technology usage. In addition, future research may want to consider adopting the actual data to better assess the relationship.

7. THEORETICAL AND PRACTICAL IMPLICATIONS

This study makes two major contributions to the current TTF theory. First, we investigated the applicability of the TTF theory to the understanding of the use of online social technology in learning business cases related to IT concepts. Second, four social factors, sharing, relationship-building, conversation, and grouping, were used as online social technological characteristics and antecedents for the TTF measure. The findings of this study suggest that the TTF theory can be used to help better understand not only user behaviour but also the usefulness of online social technology as a case-based learning tool.

8. CONCLUSION

College students are embracing online social technology in their daily life. However, adopting the technology as a pedagogical tool, particularly in learning business cases, is still at the early adoption phase. This preliminary study investigated the potential use of online social technology to help students learn business cases related to information technology from the task-technology fit perspective. Our findings suggest that online social technology can be used as a fit learning tool to improve students' understanding of business cases. In addition, case-based learners can attain improved performance by incorporating social technology into their learning process. An instructor may want to exploit other creative pedagogical strategies by incorporating social factors into the online learning community to not only enhance student learning but also increase the actual use of online social technology in learning business cases.

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AUTHOR BIOGRAPHIES

Peter Ractham is a faculty member in the Department of Management Information System at Faculty of Commerce and Accountancy, Thammasat University, Thailand. He received his PhD in Information System and Technology from Claremont Graduate University. His research interests are Enterprise 2.0, Knowledge Management, E-Learning, and Health Informatics.
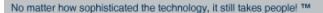
Charlie C. Chen is an associate professor in the Department of Computer Information Systems at Appalachian State University. He has authored more than 50 referred articles and proceedings, presented at many professional conferences and venues. Dr Chen has published in journals such as Communications of Association for Information Systems, Behaviour and Information Technology, Journal of Knowledge Management.

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