

# AN EMPIRICAL STUDY ON AFFECTIVE COMMITMENT AND ENJOYMENT IN TECHNOLOGY MEDIATED LEARNING

Yujong Hwang  
School of Accountancy and Management Information Systems  
College of Commerce  
DePaul University  
1 E. Jackson Blvd. Chicago, IL. 60604  
E-mail: [yhwang1@depaul.edu](mailto:yhwang1@depaul.edu)

and

Department of Electrical Engineering and Computer Science  
McCormick School of Engineering and Applied Science  
Northwestern University  
2145 Sheridan Rd, Evanston, IL. 60208

## ABSTRACT

An individual's affective commitment and enjoyment to share knowledge are critical issues in developing successful technology-mediated learning (TML) or knowledge management systems in the management science area. This paper investigates an individual's identities and gender as important determinants in developing affective commitment and enjoyment to share knowledge by email in the TML environment. Based on the test results of this study, management scientists will understand the different roles of identity and gender in developing and designing TML systems.

**Keywords: Knowledge-Based Systems, Knowledge Acquisition, End-User Computing, Human/Computer Interaction**

## INTRODUCTION AND RESEARCH MODEL

An individual's affective commitment and intrinsic motivation to share knowledge are critical issues in developing successful technology-mediated learning (TML) or knowledge management (KM) systems in the management science area. TML has been defined as "an environment in which the learner's interactions with learning materials (e.g., readings, assignments, exercises), peers, and/or instructors are mediated through advanced information technologies" [1]. Since mandatory involvement requirements may not intrinsically motivate learners to achieve high quality learning [2], affective commitment, such as identification, is an especially important determinant of TML success. In addition, social intervention for interaction and communication in e-learning positively influence outcomes in varied dimensions of TML [3, 4, 5, 6, 7]. Given that effective learning requires engagement with others in the learning community [8, 9, 10, 11], these social factors should be investigated further in the TML context. Bohlken [12] suggested that incorporating the social aspects of e-learning can enhance classroom effectiveness within a TML environment. For example, several studies suggest that in-depth learning effects are accomplished when students realize the need to learn by collaboratively sharing knowledge [13, 14, 15, 16].

Knowledge sharing has been an important variable in the TML and KM literature incorporating social factors (e.g., [1, 17, 18, 19, 20]). Despite the availability of the best technologies and rich information in the knowledge organization, KM system users' motivation and commitment to sharing knowledge in the organization often determine the success or failure of KM systems [21, 22]. For example, a simple system for "knowledge sharing" that was sent out with questions and email invitations to potential participants failed, without even a single user posting any message after six months [23]. In the TML systems context, peer participation can influence the student's attitude and action toward knowledge sharing [24]. Janz and Prasarnphanich [25] explained the relationships among organizational climate, the level of cooperative learning that takes place between knowledge workers, and the resulting level of knowledge created by team performance and individual satisfaction levels.

Based on insights into the social factors of knowledge sharing behavior, the role of affective commitment, such as identification (relationships established and maintained among group members), for the proactive adoption of KM or TML systems is recently gaining significant interest from IS and KM researchers (e.g., [21, 26, 27]). Malhotra and Galletta [21] recently argued that a system user's affective commitment development was omitted in the previous research model which investigated IS adoption in the IS and KM literature. Their arguments are based on Kelman's [28] social influence theory that explains theoretical distinctions between the varied processes (internalization, identification, and compliance) by which social influences change behavior. Malhotra and Galletta [21] argued that previous KM literature focused on commitment by compliance (to gain extrinsic reward), which makes our understanding of social influence, such as social identity and self identity, and knowledge sharing behavior incomplete. Thus, this paper investigates several psychological variables that have been recently introduced into the IS and KM literature, which enables us to more fully understand the important factors and dynamic relationships involved in knowledge sharing in the TML environment.

Sociolinguists also have claimed for years that men and women communicate with different underlying social objectives and their communication patterns are very different [29]. Yet the effects of gender on knowledge sharing have been ignored in IS research, even though gender is a fundamental aspect of communication, based on socio-linguistic research [30]. Indeed, socio-linguistic research has shown that men tend to focus discourse on hierarchy and independence, while women focus on intimacy and solidarity [30]. In general terms, men communicate more with the objective of creating and preserving their social status, while women do so more with the objective of creating rapport and social inclusion [31]. When men communicate with each other it is often on a basis of exchanging information, or as Tannen calls it "report talk," while women do so to exchange emotions, or as Tannen calls it "rapport talk" [32]. Gefen and Straub [30] also found that women perceive more social presence in email communication. Although it is clear that gender should be considered in understanding social, affective, and intrinsic aspects of knowledge sharing, there has been no study on this important aspect in TML.

In this study, social identity and self identity are hypothesized as direct antecedents to the system users' (or learners') perceived enjoyment in sharing knowledge by email. Perceived enjoyment or intrinsic motivation has been emphasized as the most important aspect of knowledge sharing success based on the self determination theory [33]. Given that committed and voluntary email communication to share knowledge is the crucial factor for TML and KM success, these

relationships should be empirically investigated further. The direct effects of social identity and self identity on perceived enjoyment toward sharing knowledge by email would be partially mediated by affective commitment (identification). Given that affective commitment includes both social and intrinsic aspects of behavior, this would be an interesting and important relationship. This study's results will clearly demonstrate the role of affective commitment (identification) and social and self identities in improving intrinsic motivation to share knowledge by email in the TML environment.

Further, the moderating effects of gender are tested in the model based on socio-linguistic research [29] and current IS literature [30, 31, 34, 35]. Venkatesh and Morris [32] found that men's technology usage decisions were more strongly influenced by their perceptions of usefulness [36]. In contrast, women were more strongly influenced by perceptions of ease of use and subjective norm. Venkatesh et al. [37] also found that the decisions of men were more strongly influenced by their attitude toward using the new technology, while women were more strongly influenced by subjective norm and perceived behavioral control. Thus, there is an important research issue of gender differences in TML adoption. This research is the first empirical test to investigate the moderating role of gender difference in the relationships among different identities, identification, and the perceived enjoyment in the TML environment. In the proposed research model, we investigate the relationship between social identity and perceived enjoyment of sharing knowledge by email as well as identification as a partial mediator in the model. Self identity is included in the model as an antecedent to perceived enjoyment and identification. The moderating effects of gender in these relationships will be tested. Male will have a stronger influence of self identity, while female will have a stronger influence of social identity. Specific hypotheses of the model are as follows;

*H1: Social Identity will have a positive effect on Identification.*

*H2: Self Identity will have a positive effect on Identification.*

*H3: Social Identity will have a positive effect on Perceived Enjoyment of Sharing Knowledge by email.*

*H4: Self Identity will have a positive effect on Perceived Enjoyment of Sharing Knowledge by email.*

*H5: Identification will have a positive effect on Perceived Enjoyment of Sharing Knowledge by email.*

*H6: Social Identity will have a stronger effect on Identification in Female.*

*H7: Social Identity will have a stronger effect on Perceived Enjoyment of Sharing Knowledge by email in Female.*

*H8: Self Identity will have a stronger effect on Identification in Male.*

*H9: Self Identity will have a stronger effect on Perceived Enjoyment of Sharing Knowledge by email in Male.*

*H10: Identification will have a stronger effect on Perceived Enjoyment of Sharing Knowledge by email in Female.*

## **METHOD AND MEASURES**

A survey of undergraduate business students in the northern region of the U.S. was implemented with the students who were in the introductory MIS course and voluntarily participated in the experiment. The students were asked to show their opinion and perception regarding knowledge sharing by group email functions in Blackboard, the Internet-based academic class management system. Each group in the class was composed of four members and was assigned to prepare two group projects for final presentation in the course. One of the group projects was a structured interview with IT experts in the field regarding IS job market issues and a recently completed IS

project management engagement. Group members were required to complete the group's work, such as interviewing, preparing an interview protocol, reporting and presenting, and to participate in the project via group emails, telephone, and face-to-face discussion in class. The second group project was a database development project using MS Access. Each group was required to develop a CD management database using seven tables and relationships in MS Access. Overall database structure was to be decided based on the discussion of group members.

We developed an online survey website and posted this URL to Blackboard for the students to access. In the pilot test with 155 participants, we reworded some items and collected the valid items with more than 0.70 composite reliability (Cronbach's alpha) and more than 0.50 item-to-total correlations using SPSS. Based on the pilot test results with these criteria [38], we kept all items in the pilot test. In the main test, an additional 411 students, all of whom were not pilot test participants, voluntarily participated in the study. The average age of participants was 21.72 years, and 52% were male. Seventy six percent of participants reported currently having a full-time or part-time job. There was no difference between the earlier participants and the later participants in the survey, showing that non-response bias was not an issue. Most of the measurement items are adapted and revised from previous research. All questionnaire items used a 5-point Likert-type scale where 1 = completely disagree, 3 = neither agree nor disagree, and 5 = completely agree. Three items adapted from Ashforth et al. [38] and Mael and Tetrick [39] were revised for the TML context to measure social identity. Three items adapted from Sparks and Shepard [40] and Charng et al. [41] were revised for the TML context to measure self identity. Three items adapted from Malhotra and Galletta [27] were used to measure identification of sharing knowledge by email. Perceived enjoyment of sharing knowledge by email was measured by three items adapted from Davis et al. [32].

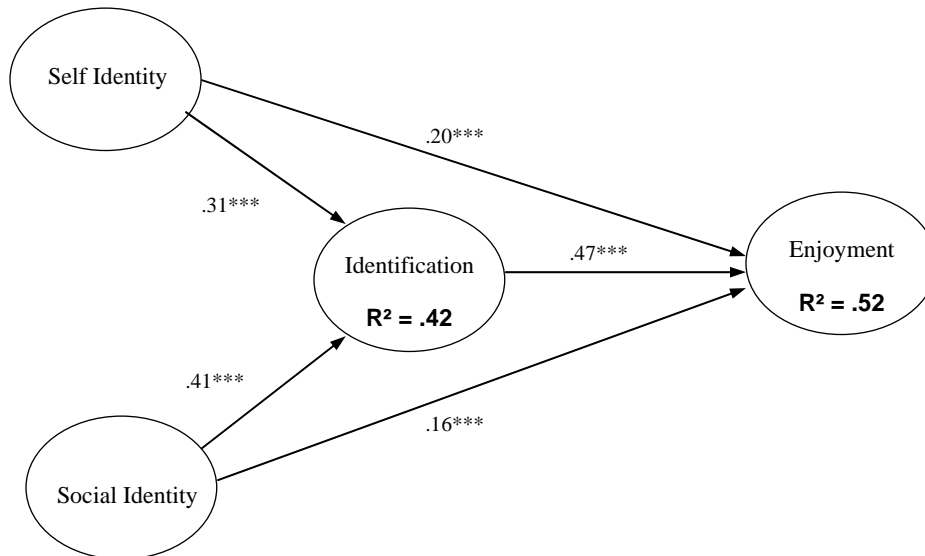
## **DATA ANALYSIS AND RESULTS**

Measure validation and model testing were conducted using Partial Least Square (PLS) Graph Version 3.0 [39], a structural equation-modeling (SEM) tool that utilizes a component-based approach to estimation. Before testing the hypothesized structural model, we first evaluated the psychometric properties of the study variables through confirmatory factor analysis using a measurement model in which the first-order latent variables were specified as correlated variables with no causal paths. The measurement model was assessed by using PLS to examine internal consistency reliability and convergent and discriminant validity [40, 41]. All four internal consistency reliabilities exceeded the minimal reliability criteria (0.7). Also, satisfying convergent and discriminant validity criteria, (1) the square root of the AVE was greater than 0.707 and greater than the correlation between that construct and other constructs, and (2) the factor structure matrix shows that items exhibited high loadings (>0.707) on their respective constructs, and no items loaded higher on constructs that they were not intended to measure. Collectively, the psychometric properties of the study variables were considered relevant and sufficiently strong to support valid testing of the proposed structural model.

The PLS structural model and hypotheses were assessed by examining path coefficients and their significance levels. Following Chin [38], bootstrapping (with 500 resamples) was performed on the model to obtain estimates of standard errors for testing the statistical significance of path coefficients using a t-test. Figure 1 provides the results of hypothesis testing. All direct paths in the model (Hypotheses 1-5) were supported within the 0.001 significance level. To test the

moderating effects of gender, we adapted the procedure by Keil et al. [42]. Hypotheses 6 – 10 were examined by comparing the path coefficients based on Wynne Chin as described by Keil et al. [42]. All the hypotheses were confirmed. Hypotheses 7, 8, 9, and 10 were confirmed within the 0.001 significance level, while hypothesis 6 was confirmed within 0.05 significance level. Table 1 shows these results.

**Figure 1. PLS Test Results of Combined Gender Samples (n = 411)**



**Table 1. Comparison of the Path Coefficients in both Samples**

	Male (n=211)		Female (n=200)		T-value comparing the two genders
	Path coefficients	Path Standard Error	Path coefficients	Path Standard Error	Male – Female
H6: Social Identity will have a stronger effect on Identification in Female.	<b>0.408***</b>	0.067	<b>0.420***</b>	0.077	<b>-1.695*</b>
H7: Social Identity will have a stronger effect on Enjoyment in Female.	<b>0.117 (n.s.)</b>	0.073	<b>0.205***</b>	0.071	<b>-12.377***</b>
H8: Self Identity will have a stronger effect on Identification in Male.	<b>0.335***</b>	0.071	<b>0.269***</b>	0.080	<b>8.875***</b>
H9: Self Identity will have a stronger effect on Enjoyment in Male.	<b>0.259***</b>	0.072	<b>0.156**</b>	0.062	<b>15.432***</b>
H10: Identification will have a stronger effect on Enjoyment in Female.	<b>0.424***</b>	0.067	<b>0.596***</b>	0.062	<b>-11.402***</b>

Note. \*  $p < .05$ ; \*\*  $p < .01$ ; \*\*\*  $p < .001$ ; (n.s.) non significant

## **IMPLICATIONS FOR PRACTICE AND RESEARCH**

The practical contribution of this research is to show important aspects of identification for knowledge sharing in TML and KM systems implementation, applying the social influence theory by Kelman [30]. The relationships among social identity, self identity, and perceived enjoyment of sharing knowledge, suggested and confirmed by this study, can be used to target activities needed to further improve TML or KM implementation. It has been emphasized that further research in IS should attempt to bridge the gap between the information-based model of the organization and the knowledge-based view that recognizes diverse perspectives, values, and attitudes of KM and TML adopters [43]. For example, KM or TML system designers can focus on satisfying group relationships among voluntary users to facilitate knowledge sharing by incorporating various approaches such as “knowledge repositories” or “communities of practice” [44]. Identification of knowledge contributors is the most important factor for system success, specifically when the contributors believe the group is important to themselves. This identification of knowledge contributors is a more powerful factor for knowledge sharing than the other normative or mandate factors. Our proposed model supports the overall understanding of these phenomena, based on our empirical findings.

Given that much current IS research focuses on knowledge sharing, the present study shows that the effects of identities and gender are crucial to improving the “enjoy-ability” factor in KM and TML systems. As the empirical results in this study show, there are significant moderating effects of gender in these relationships. For example, “communities of practice” in KM and TML would be more successful with female group members because of the stronger relationship between social identity and perceived enjoyment in female. These findings also provide further practical guidance in developing and designing KM and TML systems. Further research is also needed to specifically examine the influences of other individual characteristic constructs on social identity, self identity, identification, and intrinsic motivation to share knowledge by email. The relationships among other constructs, such as culture, capability, and extrinsic motivation, and different identities also deserve exploration. Further, how these psychological constructs are related to actual learning performance should be investigated further in future research.

## **CONCLUSION**

In conclusion, knowledge sharing by email is a fundamental driver of TML and KM success. The present research establishes an empirical link among different identities, identification, and gender, representing an important initial step toward understanding social and psychological interpretation of technology-mediated knowledge sharing behavior. Our model and findings should help TML and KM systems designers and adopters understand who (he or she) most enjoys sharing their own valuable knowledge by email with his/her complex identities.

## **REFERENCES**

References available upon request from Yujong Hwang ( [yhwang1@depaul.edu](mailto:yhwang1@depaul.edu) )