A Development of Causal Relationship Model of the Google Sites Usage for Learning at Rangsit University

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ABSTRACT

The study aimed to develop a causal relationship model for the usage of Google Sites for learning by using the Technology Acceptance Model (TAM) and the Social Media Acceptance Model (SMAM). The literature review indicated that there was no paper on the causal relationship model on the usage of Google Sites for learning in Thailand. The proposed model consisted of six latent variables as follows: 'Performance', 'Effort', 'Self', 'Communication Function', 'Intention', and 'Google Sites Usage'. The survey sample consisted of 450 students from Rangsit University. Structural Equation Modeling (SEM) was used to analyze the causal relationship model. Moreover, statistical analysis was conducted to create a dataset using the packed statistic program. The results indicated that the adjusted model was consistent with the empirical data. Goodness-of-Fit indicators included a Chi-square value of 545.99 with 232 degrees of freedom; CMIN/DF = 2.35; SRMR = 0.04; GFI = 0.90; AGFI = 0.90; CFI = 0.96, and RMSEA = 0.06. In summary, Google Sites Usage were positively correlated and influenced to the intention to use Google Sites for learning at Rangsit University.

Keywords: Structural Equation Modeling, Technology Acceptance Model, Social Media Acceptance Model, Technology Social Media Acceptance Model.

I INTRODUCTION

Technology Social Media Acceptance Model (TSMAM) applies 'Performance', 'Effort', 'Self', 'Communication Function', 'Intention', and 'Google Sites Usage' for learning at Rangsit University. The researcher identified the relationship of the Google Sites Usage and learning in Thailand. This study has developed the proposed models created from the Technology Acceptance Model (TAM) and the Social Media Acceptance Model (SMAM) using a research based approach.

II LITERATURE REVIEW

A. Social Media

Nowadays, social media is the most popular media. It allows users to produce, communication and share data with each other. Facebook, Twitter, YouTube and Google+ are examples of social media services. People can use social media to connect with other users throughout the world (Lenhart et al., 2010).

Google Sites can be an influential tool to support users in collaboratively building a common source of information. Google Sites is another primary tools in Google for Education. Google Sites allow users or teachers to easily create edit and preserve a frequently update multimedia websites. These sites are appropriate for use at the districts, schools, or classroom levels or for individual student projects or portfolios. Similar to Google Docs, each Google Sites can be shared with other users, allowing multiple colleagues or students to collaborate on the content. Being well-integrated with other Google services, Google Sites make it easy to embed images, video, calendar, documents, maps, slideshow, and forms. A variety of themes and templates allow a user to customize the look and feel of each site and to scaffold site set-up for students. Sites include announcement pages that can be used by educational leaders as a blog to reach as a blog to reach out to the staff, student and community. Google Sites is one popular online tool suite available to schools for free (McLeod and Lehmann, 2012).

B. Structural equation modeling

Structural Equation Modeling (SEM) is a statistical technique. SEM has extended with path analysis, which was invented by Wright (1921). In the recent years, the use of SEM has increased among educational researcher. SEM analysis starts by drawing a path diagram. It consists of boxes and circles which connected with an arrow. An observed variables are represented by rectangle or square box and latent by a circle or ellipse. An arrow with the single headed or path are used to define causal relationships in the model, an arrow with the double arrows indicate covariance or correlation without causal interpretation. The Confirmatory Factor Analysis (CFA) model in SEM represented

statistical procedure are used to estimate the number of underlying factors and the factor loading (Arbucle, 1997; Jöreskog and Sörbom, 1989).
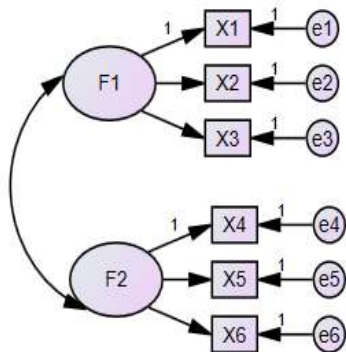

Figure 1. Confirmatory Factor Analysis
(Holzinger and Swineford, 1997)

III   METHODOLOGY
A. Technology Social Media Acceptance model

The purpose of this study was to develop the Technology Social Media Acceptance Model (TSMAM) which is a mixed model between the TAM and the SMAM models. Five cognitive are posited by the SMAM: 'Performance', 'Effort', 'Self', 'Community Function', and 'Intention'. The SMAM was developed based on the e-Learning Acceptance Model (ELAM). The ELAM is an extension of the Unified Theory of Acceptance and Use of Technology (UTAUT) model, this model has used for estimate admission of e-learning in learning (Umrani–Kham and Lyer, 2009). However, using the UTAUT is not a comprehensive measurement for this study. Using the SMAM model can measure the flexibility, interactivity and self-efficacy which have not presented in the UTAUT and the TAM. Google Sites usage will show a collaboration in learning, share idea together and easy access to learning resources (Franz, 2011; Roblyer et. al., 2010). The study that use social media will cause communication in the classroom and make a collaborative skill. YouTube Usage in student's higher-order will develop their decision skill and problem solving (Bunus, 2010; Greenhow and Roblia, 2009). Using social media in the classroom causes teachers to share videos to encourage students and their discussions with their classmate. Moreover, the SMAM model can also present self-efficacy that will refer to the student's skill of using computing technology to indicate efficacy of social media in higher education which students who have higher self-efficacy will also show positive attitudes toward social media that are important in determining their intentions of social media usage (Roblyer et. al., 2010; Veletsianos and Navarret, 2012). The self-efficacy is a group of social media efficacy, attitude and enjoyment (Balakrishnan and Lay, 2015).

One of well-known models is related to the Technology Acceptance Model (TAM) purposed by Davis in 1989. The TAM explains a respond or predicted of acceptance technology. Davis (1989) suggested that user can explain, motivate of use that provide a basis with trace external variable: influence, attitude, and intention to use. Four cognitive are posited by the TAM such as Perceived usefulness (Performance), Perceived ease of use (Effort), Intention and Google Site Usage (Davis et al., 1989; Adams et al., 1992). Social media sites provide various tools and applications that the services to the users as they share and exchange information. In this study, the TAM assumes that intention of use technology, which leads to actual usage and referring to Performance related activities by using Google Sites.

B. Instrument

The purpose of this study verifies the influence that Google Sites Usage for learning at Rangsit University. A questionnaire with 42 items assessing demographic details such as Google Sites Usage in a higher education. The model consisted of four types: Performance, Effort, Self and Communication Function. These categories were set as exogenous variables. Intention and Google Sites Usage was set as endogenous variables. Hypotheses were formulated on the relationships between those variable. Figure 2 shows a schematic diagram of the research model for this study.
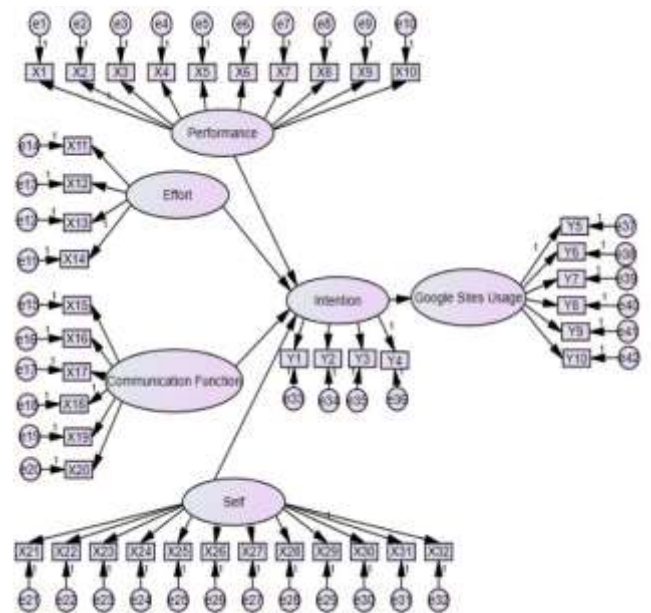

Figure 2. Technology Social Media Acceptance Model (TSMAM)

Hypotheses: To verify the variable included in the proposed research model. The study were set up hypotheses with regard to major factors that work between exogenous variables (Performance, Effort, Self and Communication Function) and an endogenous variables (Intention and Google Sites Usage) based on theoretical relevance. The questionnaire had three sections as follows.

Section A – In this segment, were questions about the overview of respondent's gender, Year level of student, and faculty. The definition for the three different adoption Google Sites Usage were provided in the questionnaire and the respondents were asked to select the closest definition.

Section B – The item in this segment is related to the respondent's intention to use Google Sites for grounded in learning. This consists of Performance has 10 items such as "You can develop a better understanding of the topic". Effort has 4 items such as "Do you think that Google Sites is easy to use". Communication Function has 6 items such as "Do you think the use of Google Sites to communicate with ease in learning more". Self has 12 items such as "Do you agree that the use of Google Sites to help develop your knowledge". And, Intention has 4 items such as "I think it would be interesting to use Google site for learning".

Section C – This segment are related to the respondents' Google Sites Usage. It has 6 items assessed the respondents' Intention to use Google Sites for learning. Such as "You are interested in bringing Social Media into the classroom."

C. Respondents

The self-administered questionnaires are collected from 450 student at Rangsit University in Thailand, which has used Google Sites in their classrooms in April 2016. A total of 450 questionnaires were returned and of these, 430 were completed and analyzed. Gender analysis revealed a fair distribution between male (37%) and female (62.5%).

IV RESULTS

This analysis was conducted using the Structural Equation Modeling (SEM) with a full model analysis intended to test the models and hypotheses based on the research questions. The result indicated that the adjusted model was consistent with the empirical data. Goodness-of-Fit indicators included a Chi-square value of 545.987 with 232 degrees of freedom; CMIN/DF = 2.35; SRMR = 0.04; GFI = 0.90; AGFI = 0.90; CFI = 0.95 and RMSEA = 0.06. Normally, a non-significant Chi-square result indicates a good model fit. However, the Chi-square

test is not a satisfactory test of model fit considering its dependency on sample size (Bentler and Bonett, 1980; Byrne, 1994). Therefore, several additional fit statistics were considered together with the Chi-square test. As a rule of thumb, values of relative χ^2/df less than two or three indicate a good model fit, values of RMSEA less than 0.08 indicate a reasonable fit, and values of CFI larger than 0.90 indicate an acceptable fit (Hu and Bentler, 1999). The researchers adjusted the model as the SEM suggested. The relative Chi-square to degree of freedom should be in the range 2:1 or 3:1 for an acceptable fit between the hypothetical model and sample data (Carmines and McIver, 1981). However, some researchers have recommended in the range of ratios as low as 2 (Tabachnick and Fidell, 2007) to as high as 5 (Wheaton et. al., 1977) to indicate a reasonable fit (Marsh and Hocevar, 1985).
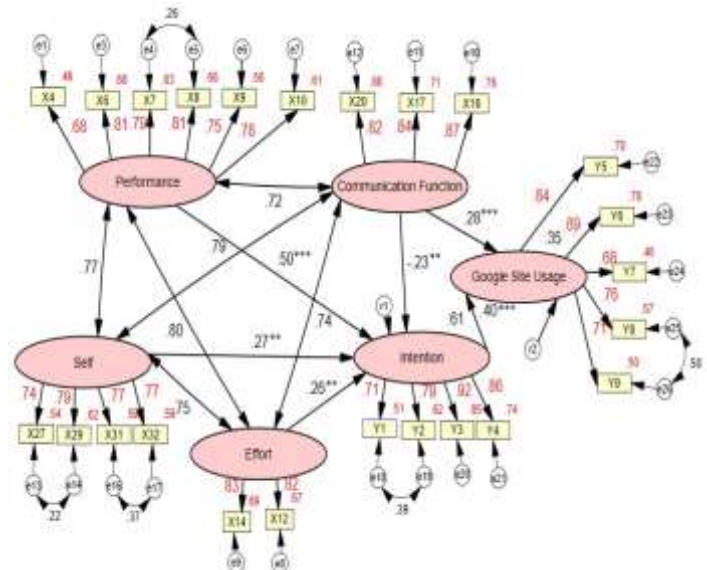

Figure 3. The Adjusted Model

Table 1. Effect of variables on the Google Sites Usage for learning.

	Intention			Google Sites Usage			Remark
	Direct effects	Indirect effects	Total effect	Direct effects	Indirect Effects	Total effect	
Performance	0.50***		0.50		0.20	0.20	Support
Effort	0.26**		0.26		0.10	0.10	Support
Communication Function	-0.23**		-0.23	0.28***	-0.09	0.20	Support
Self	0.28***		0.27		0.11	0.11	Support
Intention				0.40***		0.40	Support

**p ≤ 0.05, ***p ≤ 0.001

The result of testing the structure model is presented in Table 1. The result shows the Communication Function has a direct effect on the Intention (β = -0.23, p < 0.05). The direct effect of the Communication Function on Google Sites Usage is insignificant (β = 0.28, p < 0.001), that the indirect

effect on Google Sites Usage through Intention (β = The result that shows Intention has a direct effect on Google Sites Usage (β = 0.40, p < 0.001).

The result shows that the Performance has direct effect on the Intention (β = 0.50, p < 0.001), that the indirect effect on Google Sites Usage through Intention (β = 0.20, p < 0.05). Effort has direct effect on Intention (β = 0.26,p < 0.05), that the indirect effect on Google Sites Usage through Intention (β = 0.10, p < 0.05). Self has direct effect on Intention (β = 0.27, p < 0.05), that the indirect effect on Google Sites Usage through Intention (β = 0.11, p < 0.05). Intention has direct effect on Google Sites Usage (β = 0.40, p < 0.001).

V CONCLUSION

The results of this study is about the causal relationship of the Google Sites Usage for learning in Thailand. It provided the innovation for higher education that interested in the educational benefits associated with Google Sites. This study revealed the numbers of benefits in learning from Google Sites. However, further research are needed. The future research will be focused on the higher educational community; and how to adopt them into the classroom. These will enhance the confidence and effectiveness for student learning. The further research will also need to be focused on the contents that engage students with a more approach in learning including the use of social media in the classroom.

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Latent	Observe	Description
Performance	X4	Enable me to access more academic resources conveniently
	X6	Do you think Google Site enhance the skills of students.
	X7	Do you think the use of Google Site is content to better understand
	X8	Do you think the use of Google Site full fill that you need.
	X9	Do you think Google Site can make a choice based on your interests
	X10	Do you think the use of Google Site has full knowledge of the content
Effort	X12	Do you think that Google Site interaction in learning is easily understood
	X14	Do you think the use of Google Site is easy to research on learning
Communication Function	X16	You can use Google Site to discuss during class
	X17	You can collaborate with teachers more easily.
	X20	You can share technical information with others easily.
Self	X27	I use Google site for search information is easily
	X29	I feel active for use Google site
	X31	I use Google Site for review learning
	X32	I use Google site when do not understand in lesson
Intention	Y1	I think it would be interesting to use Google site for learning
	Y2	I think should have Google site to use in class
	Y3	I do not mind using Google site for learning
	Y4	I want to frequent use Google Site for learning
Google Site Usage	Y5	Review the lesson through Google site
	Y6	Do you use Google site in lessons ahead
	Y7	Send your homework or exercise instructor through Google site
	Y8	You can submit a report to the instructor via Google site
	Y9	You use Google site when have question in lesson