Investigating Gender Diversity in Adopting Social Media for Education: Theory of Planned Behavior

Ibrahim Akman, and Cigdem Turhan

Abstract— In this study, gender diversity for adoption of Social Learning (SL) has been analyzed using the conceptual research model, Theory of Planned Behaviour (TPB). A survey approach has been adopted for this purpose. The path analysis is used for data analysis based on least square regression to investigate direct and indirect relationships among the variables included in the research model. The test results indicated that, except Perceived Behaviour Control (PBC), there is no gender diversity in the other conventional constructs of TPB regarding the adoption of SL.

Keywords— **P**ath analysis, regression, Social Learning, Theory of Planned Behaviour.

I. INTRODUCTION

TIM Berner-Lee's vision in the creation of the World Wide Web was to develop "an information space through which people can communicate by sharing knowledge in a pool" [1]. Particularly, Web 2.0 has provided a foundation for communication, participation, collaboration and sharing anytime and anywhere in the world [2], [3]. Currently, Web 2.0 is interchangeably used with the term "Social media". In the last decade, social media has become highly popular and the fastest-growing Internet-based technology especially among young people [4]. This new media also introduces many challenging new research problems and many exciting real-world applications such as social commerce, social learning, social group recommendation, etc. Its influence on education has become important due to the advantage of many-to-many spread of information in recent years [4]. Additionally, the social networking trend is a relatively new one and little research has been reported on its acceptance and use in education [4]. Against this backdrop, this study investigates the adoption of social media for learning purposes.

II. RESEARCH METHODOLOGY

In this study, TPB [5] is used as the research model since it provides a conceptual model to assess IT usage behaviour

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(Figure 1). TPB has been proven to be successful in many of the IT studies from different perspectives [6], [7]. The conventional factors included in TPB are "Behavioural Attitude (BA)", "Subjective Norms (SN)", Behavioral Intention (BI)" and "Actual Behavior (AB)" (Figure 1).

This means TPB is an important conceptual model, which provides a framework necessary not only to predict, but also to understand behavior by examining an individual's beliefs, attitudes, motivation and perception of social norms with regards to using social media [5]. The TPB is a widely studied area in social psychology. It has been used successfully in a wide range of applications in behavioural science to empirically predict and understand individuals' behaviour [8]. Additionally, TPB is suggested by the social networks literature due to the fact that it can accommodate the dynamic nature of behaviors and capture changes in the intentions [9]. Based on this backdrop and in parallel with the available literature, we decided to use TPB as our research model and constructed the following hypotheses accordingly.
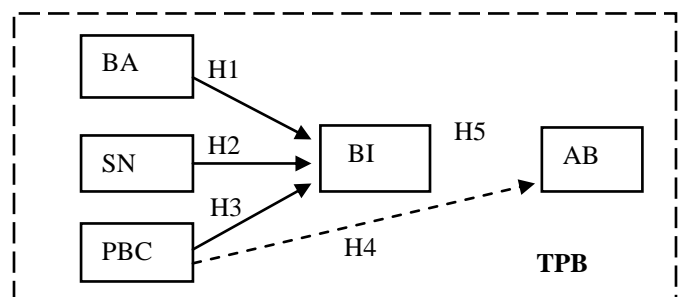

Fig. 1 TPB Research model [10]. Boxes represent the constructs. The constructs inside dashed rectangle represents TPB. Casual effects are given by arrows connecting boxes.

H1: There is no gender diversity in that Behaviour Attitude has positive influence on Behavioural Intentions for adopting SL.

H2: There is no gender diversity in that Subjective Norms has positive influence on Behavioural Intentions for adopting SL.

H3: There is no gender diversity in that Perceived Behavioural Control has positive influence on Behavioural Intentions for adopting SL.

H4: There is no gender diversity in that Perceived Behavioural Control has positive influence on Actual

Behaviour for adopting SL.

H5: There is no gender diversity in that Behavioural Intentions has positive effect on Actual Behaviour for adopting SL.

III. RESEARCH INSTRUMENT AND DATA

This study adopted a survey approach to analyze the behaviour regarding adoption of SL (Figure 1). The data were obtained by means of a questionnaire containing 11 research questions grouped under 5 constructs (Table 1). The data was collected using a 5-point Likert Scale (5=very much/very strong/very high, 4=much/strong/high, 3=moderate, 2=little/weak/low, 1=very little/very weak/very low) since this scale is widely used for survey-type studies in the literature.

TABLE I

LIST OF CONSTRUCTS AND CORESSPONDING ITEMS

Const.	Item
BA	*I beleive that I have favorable attitude towards using social media for education.*
	I believe that using social media for education is convenient for me.
	I beleive that using social media for education is beneficial for me.
SN	*I think that most people who are important to me expect me to use social media for education.*
	I think that most people who are important to me use social media for education.
PBC	*For me using social media for educational activities is easy.*
	For me using social media for education is under my contro.l
BI	*I intend to use social media for education in the future.*
	I intend to embed social media in my education on a regular basis.
AB	*I use social media for education.*
	I use ICT (Inf. & Comm.Tech.) for education.

The data was collected during the 2nd International Engineering Education Conference organized by Atilim University and the annual one-day meeting on issues - problems and developments - in the use of IT, organized by the Turkish Informatics Association (TIA). A total of 142 completed survey questionnaires were obtained. The least square regression analysis techniques were employed to apply the Path Analysis approach.

For the establishment of content validity, the items and their corresponding constructs were adapted from prior studies and modified according to the context of this study. Additionally, an extensive refinement process was used during the selection of items based on a pilot study and expert opinions. The cronbach's alpha was used to assess reliability of the survey data and the overall internal reliability was found to be 0.789

for females and 0.848 for males. This shows that the data exhibit high reliability and measure the same concept [11]. The analyses also show existence of internal reliability for multi-item constructs BA, SN, PBC and BI since their corresponding factor loadings are measured as 0.868 0.725, 0.984 and 0.840 for females and, 0.911, 0.808, 0.711 and 0.875 for males, respectively [11].

IV. RESULTS

A. Descriptive results

The demographic profile of male and female respondents is summarized in Table 2. The inspection of this table shows that the percentage of the male respondents appears to be more (69.72%) and half of the males were under 31 years of age (49.5%). These percentages are 30.28% and 72.09% for females respectively. Of the males in the sample, 69.69% reported an average or higher level of awareness on social networks and surprisingly, this percentage for females was as high as 83.72%. The chi-square test result does not indicate any significant difference for social media awareness (Chi-Square = 4.604; DF = 8; P-Value = 0.799) among age groups.

TABLE II

DESCRIPTIVE RESULTS

Variable	Male (N=99)		Female (N=43)	
	N	%	N	%
Age		100.0		100.0
1:<21	1	1.02	6	13.95
2:21-30	48	48.48	25	58.14
3: 31-40	20	20.20	6	13.95
4:41-50	19	19.19	5	11.63
5:>50	11	11.11	1	2.33
Usage level of SM		100.0		100
1	22	22.22	4	9.13
2	20	20.20	6	13.95
3	22	22.22	10	23.26
4	16	16.16	13	30.23
5	19	19.19	10	23.26
Usage of level SL		100.0		100.0
1	4	4.04	3	8.96
2	3	3.03	3	6.98
3	18	18.18	4	11.63
4	32	32.32	9	20.93
5	42	42.42	23	53.49

Most of the respondents reported use of SL at an average level or higher (63%). Of the male respondents, 57.57% reported social media usage to be average or more, whereas this figure for their female counterparts was higher (76.75%). Interestingly, majority of the male respondents reported the SL usage to be average or higher (92.92%). This usage is slightly less for females (86.05%). Additionally, considering all respondents, the average or more SL usage for younger respondents (less than 40 years of age) is higher (67.61%) than elder ones. However, the relationship between age and SL usage does not show any significance (Chi-Square = 5.510; DF = 6; P-Value = 0.480).

B. Test results

The hypotheses were investigated for each gender

seperately. The results of the regression and its respective p-values are given in Table 3 for each gender. The last column of the same table also provides a summary of the existence of gender diversity based on the differences in the significance of the test results for males and females.

TABLE III
TEST RESULTS

		Hyp.	FEM. (F)	MALE (M)	Test result (S: Sig.; I: Insig.)	Diversity
Ind. cons.	Dep. cons.		p-val*	p-val*		
BA	BI	H1	0.000**	0.000**	Both S	Not Div.
SN	BI	H2	0.338	0.658	Both I	Not Div.
PBC	BI	H3	0.203	0.404	Both I	Not Div.
PBC	AU	H4	0.574	0.000**	(F) I; (M) S.	Diverse
BI	AU	H5	0.016*	0.000**	Both S	Not Div.

(*) and (**) indicate statistical significance at 1% and 0.1% significance levels respectively

The inspection of p-values (Table 3) indicates:

• The test results are in favor of H1. In other words, the coefficients were found to be both positive for the relationship between "gender" and "behavioural attitude". Additionally, "behavioural attitude" is significant for both females (coeff= 0.568, p-value= 0.000) and males (coeff= 0.543, p-value= 0.000) at 0.1% significance level. This means there is no gender diversity in terms of the significance results for the predictive effect of "behavioural attitude" and H1 is accepted. This can also be interpreted as an increase in behavioural attitude significantly increases behavioural intention for each gender.

• The regression coefficients were obtained to be positive and test results do not show any significance in terms of "subjective norms". Therefore, H2 is rejected for both females (coeff= 0.140, p-value= 0.338) and males (alpha-value= 0.035, p-value= 0.658). This means, there is no gender diversity for the variable "subjective norm". In other words, social pressure does not have any role in using SL for both genders.

• There no gender diversity for the variable "perceived behavioural control" because the regression results do not show significance for this variable among females (alpha-value= 0.189, p-value= 0.203) or males (alpha-value= 0.076, p-value= 0.404). Considering positive regression coefficients, we can conclude that H3 is accepted.

• Surprisingly, genders show different views since test result is insignificant for females (coeff=0.141, p-value=0.574) but significant for males (coeff=0.564, p-value=0.000) regarding H4 and therefore, H4 is rejected. This means, contrary to females, males have significant control of behaviour towards actual usage of SL.

• Finally, inspection of p-values in Table 3 shows significance for females (coeff= 0.381, p-value= 0.016)

and males (coeff= 0.421, p-value= 0.000), and H5 is accepted. In other words, behavioural intention has positive effect on actual usage of SL for both genders.

V. CONCLUSIONS

Present study used a survey approach for the purpose of investigating the usage of SL. The data was obtained using the survey approach. TPB was adopted as the research model and path analysis approach was used for the analyses. Except H4, the test results supported the predictive power of TPB for the actual behaviour of individuals in adopting SL.

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