

The Moderating Effect of Gender and Education Level on the Use of Social Networking Sites

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Abstract

This study adopted the UTAUT2 model to investigate the moderating impact of gender and level of education differences that influence the intention and use of social networking sites (SNS) among students at higher learning institutions in Malaysia. Specifically, the researchers were interested in determining whether or not gender and education level played a role in this relationship. A total of 498 students participated in the online survey to evaluate the SNS's acceptance. Partial Least Square Multigroup Analysis (PLS-MGA) revealed that gender moderated the relationship between Technology Cluster and SNS Use Behavior. Additionally, education levels moderated the relationship between Facilitating Conditions and SNS Use Behavior and, between Habit and SNS Use Behavior. These findings provided helpful information for social networking service providers or educational institutions to better understand students' behaviour toward using social networking services. This enabled the stakeholders to improve the features of social networking services or maximise the use of SNS in accordance with the findings.

Keywords: *Social Networking Sites, Moderator, UTAUT2, Gender, Education Level*

1. Introduction

Social networking sites (SNS) have grown in popularity and gained widespread acceptance since their introduction, especially among youngsters. SNS has evolved into an indispensable medium for individuals to communicate with one another, as well as a source of breaking news, shared information, and entertainment. The development of social networking services is impacted by a broad range of other variables in addition to technological factors. Any technological system can only help an individual, organisation, or nation if it is utilised.

The vast majority of studies that have been conducted on the subject of students' usage of SNS have concentrated more on determining how students feel about using such sites in an educational environment [1]–[3]. A significant number of students actively participate in social networking sites by following educational groups for various reasons, including the opportunity to learn new things, meet new people who share their interests, and remain current on matters that are of particular interest to them [4]. The SNS has a lot to offer in academic and non-academic activities.

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Numerous studies have examined technology's impact on the proliferation of SNS[5]–[7].

The majority of acceptance theories centred on the technology factors. However, there is also a need to study the moderators that affect the relationship between the factors. Education looks likely to have a favourable effect on our attitudes toward technology. Therefore, it is reasonable to assume that education and technology adoption are positively correlated, particularly when higher levels of education are linked to more technology usage [8]. Furthermore, to fully comprehend the adoption, usage, and impacts of technology, gender must be taken into account [9]. Hence, this study looks at the impact of moderators, education level and gender on the acceptance of SNS among higher learning institution students in Malaysia.

2. Related Works

The related works in this study focused on the moderators which is gender and education level which is applied in the proposed model to determine the moderating effects between the independent and dependent variables.

2.1 Gender as Moderator

Various aspects in the process of embracing SNS technology potentially moderate the influence of other variables on intention. When a moderator influences the strength or direction of a relationship between a dependent and independent variable, this is referred to as a moderating effect [23]. Gender and education level were chosen based on the research in the area of SNS behavioural models to see whether they have a moderating influence.

Regarding user technology acceptance, gender and its relationships with other acceptance factors have been shown to impact user adoption behaviours [11]. There has been a lot of focus in the literature on technology acceptance on the need to know how factors like age and gender influence an individual's willingness to embrace and utilise new technologies [24]. According to the findings of a number of studies, males and females vary in a number of aspects associated with technology, including adoption, regardless of gender. For instance, a study by [25] on the moderating effects of gender in the acceptance of mobile SNS has found that gender moderates the influence of social influence towards behavioural intention towards mobile SNS. In addition, gender moderates the impact of facilitating conditions on mobile SNS usage behaviour. The findings suggest that gender plays a moderating role in the acceptance of mobile SNS. Another study indicates that gender is an important demographic factor that has both direct and moderating effects on behavioural intention and technology adoption [26]. Different researchers have found that gender matters in SNS [25], [27], [28].

2.2 Education Level as Moderator

Research conducted by [29] investigated the factors that influence Saudi students' approval of learning management systems (LMS) in public universities. The study

also examined how factors such as education level (undergraduate versus postgraduate) and previous experience impacted students' utilisation of LMS. The results showed that the suggested model explained more variation in undergraduate students' models than in postgraduate students' models, meaning that undergraduate students' dependent variables had a better model fit. More correlations were statistically significant among postgraduate students than among undergraduate students, suggesting that the suggested model may be more applicable to postgraduates than undergraduates. This shows that students of all educational levels, regardless of their educational background, are more likely to use LMS if they are simple to use. According to [8], our educational experiences should benefit how they shape our ideas on technology. A positive correlation between education and the use of technology may be expected when a greater degree of education is associated with increased technology use [8]. With that in mind, one of the purposes of this paper is to investigate the moderating effect of the level of education on the acceptance of SNS technologies.

2.3 Proposed Model

Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) is an enhancement of the UTAUT theory created by Venkatesh, Thong, and Xu [10] to investigate technology adoption from the standpoint of technology service purchasers or consumers. UTAUT consists of four independent variables: Performance expectancy, Effort Expectancy, Social Influence and Facilitating Conditions and two dependent variables, Behavioral Intention and Use Behavior. In addition, four moderator variables influenced the independent variables: 'gender', 'age', 'experience' and 'voluntariness of use' to study the effects on the predicted construct (Behavioral Intention and Use Behavior). As for UTAUT2, another three independent variables were introduced: Hedonic Motivation, Price Value and Habit. As for moderators, 'voluntariness of use' was dropped. By combining eight disparate theoretical frameworks: Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Technology Acceptance Model (TAM), Combine TAM and TPB (C-TAM_TPB), Motivational Model (MM), Model of PC Utilisation (MPCU), Innovation of Diffusion Theory (IDT) and Social Cognitive Theory (SCT), UTAUT's empirical results account for as much as 70% of the variation in technology adoption [11]. The model incorporates 41 independent factors for predicting user intention and has primarily been criticised for its complexity [12]. UTAUT2's improvements significantly increased the percentage of variance in behavioural intention (from 56% to 74%) and technology use (from 40% to 52%) when compared to UTAUT [10].

In this study, UTAUT2 was selected because of the theories' strong application and remarkable theoretical integration. This study also focused on the moderators' variables that influence the construct, which are gender and education level. All UTAUT2 variables were tested to see the moderator's effect except for Price Value. It was excluded due to the fact that basic SNS use is free without involving any charges. In addition, three external variables were added, which are Privacy Concern, Trust and Technology Cluster. Below is the description of each

independent variable that was identified. Figure 1 shows the factors and moderators that involved in the study:

- i. Performance Expectancy is the degree to which utilising the system will aid in accomplishing tasks and enhancing task performance [11]. The system in this investigation pertains to the technology known as SNS.
- ii. Effort Expectancy relates to how easy a system is to operate [11]. [11] stated that it is a crucial factor in the preliminary stages of technology adoption in both voluntary and mandatory contexts. Users have higher expectations for a product's performance if they believe it will be easy to use and will not require them to exert much effort.
- iii. Social influence is the extent to which a person thinks that important people think he or she should use the new system [6]. Some studies have found that when people are under pressure to conform, the effects of social influence on their intentions increase. In voluntary settings, however, social influence works by changing how people think about technology.
- iv. Hedonic Motivation refers to the amount of enjoyment or pleasure derived from utilising various forms of technology. In the field of information systems research and in the context of consumers, hedonic motivation is conceived as perceived enjoyment, which was discovered to influence the adoption and usage of technology [10].
- v. Facilitating Conditions is the extent to which a person believes that an organisational and technological infrastructure exists to facilitate system utilisation [11]. According to [13], significant drivers of the actual usage of a system include both the facilitating conditions and the users' behavioural intentions. It was discovered that the availability of an information and communications technology (ICT) infrastructure, the dependability of Internet bandwidth, and the accessibility of technical assistance significantly influenced users' strong desire to use SNS.
- vi. Habit is defined as the amount to which people tend to conduct actions (use Information System) automatically due to learning [14]. [15] argues that SNS users would exhibit habitual behaviour because of the effect of satisfaction on Habit, which might serve as an extra motivator for them to continue using the site.
- vii. Privacy concerns, according to [16], are privacy risks when users are concerned about their personal information being posted on a social networking site. Therefore, the user's confidence level in the SNS setting is directly related to the user's level of privacy concern [17].
- viii. Trust in technology means that users have faith in the capabilities of the SNS to secure their personal information[18]. As defined by [19], "the

dependence or readiness to rely on technology to fulfil a certain task because of the good features of the technology." For almost a decade, the significance of trust as an IS component has been well-recognised [20].

- ix. Technology Cluster refers to one or more specific elements of technology that are generally understood to be connected [21]. This term was coined to describe the common trend of grouping technologies that perform similar tasks together. New technologies can be predicted to be adopted based on the prevalence of existing technologies with similar functions [22]. This study examined how often adopters used the features of SNS that were similar to features they already had. It undertook this by predicting that if a person often used the features of similar technologies they already owned, they would be more likely to use the new technology and use it more often.

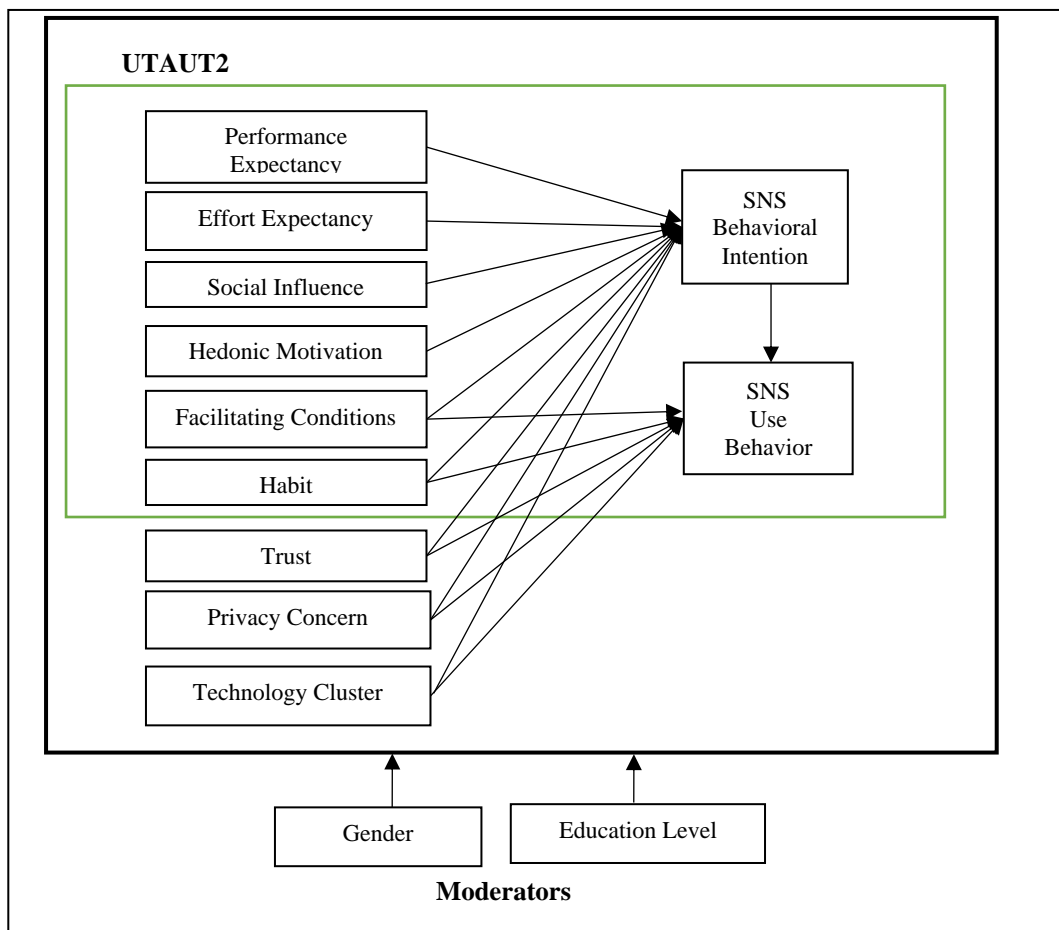


Figure 1. Factors and moderators of SNS acceptance

3. Methodology

The goal of this study necessitated the adoption of a methodology based on instruments or quantitative research methodologies for data collection. Statistical study of research relationships between variables or factors, correlation analysis, and association all are realised in these resulting figures, tables, and graphs. Using this method, we were able to test the predictions of our theoretical model with concrete, observable data. For data collection, we have utilised an online questionnaire. All items in our questionnaire were scored on a Likert scale. In all, 498 valid responses were used for this study. This investigation utilised two different application software to collect, analyse, and evaluate the gathered data. The formulation of the questionnaire, as well as the collection of the descriptive statistics of our sample, were both accomplished through the use of the web application Google forms. We evaluated the theoretical model's appropriateness and collected data thanks to the software applications SPSS version 26 and SmartPLS version 3.2.6. Partial Least Squares Multigroup Analysis (PLS-MGA) is utilised to evaluate the moderating influence of categorical variables, and the approach proposed by Hair et al. (2017) for evaluating continuous moderators is implemented. Based on the PLS-SEM bootstrapping approach, this non-parametric method of significance test evaluates the group difference.

4. Results

The results of the moderator analysis are described below.

4.1. Gender moderator analysis

As shown in Table 1, the moderating effect of gender was investigated using PLS-MGA, as described by [30]. Based on these findings, it is clear that gender merely has a moderating influence on the relationship between Technology Cluster and SNS Use Behavior. For male students, the study yielded a path coefficient value of 0.226 for the association between Technology Cluster and SNS Use Behavior, whereas, for female students, the value was 0.419. Compared to the male students, the path coefficient for the female students was found to be much greater where the difference in path coefficient between the male and female groups was estimated to be 0.192. The p-value for the gender effect on Technology Cluster and SNS Use Behavior is 0.013, indicating that the impact is statistically significant. This finding demonstrates that gender moderates this association, which indicates that the Technology Cluster is more connected to the SNS Use Behavior for female students.

Table 1. PLS-MGA Results for Gender's Moderating Effect

Paths	Male		Female		Male Vs Female			
	p ⁽¹⁾	Se p ⁽¹⁾	p ⁽²⁾	Se p ⁽²⁾	p ⁽¹⁾ - p ⁽²⁾	t-Values	p-Values	Sig.Level
PE-> BI	-0.069	0.082	- 0.009	0.046	0.060	0.684	0.494	Not Supported
EE->BI	0.182	0.079	0.082	0.052	-0.100	1.071	0.285	Not Supported
SI -> BI	0.120	0.064	0.000	0.048	-0.120	1.455	0.146	Not Supported
HM -> BI	0.072	0.088	0.231	0.054	0.159	1.614	0.107	Not Supported
FC -> BI	0.070	0.080	0.022	0.053	-0.048	0.501	0.617	Not Supported
FC -> UB	0.039	0.068	0.108	0.048	0.069	0.815	0.415	Not Supported
HA -> BI	0.340	0.087	0.356	0.054	0.016	0.165	0.869	Not Supported
HA -> UB	0.236	0.070	0.106	0.06	-0.130	1.304	0.193	Not Supported
TR -> BI	0.201	0.062	0.148	0.044	-0.053	0.698	0.486	Not Supported
TR -> UB	0.038	0.055	0.036	0.047	-0.003	0.036	0.971	Not Supported
PC -> BI	0.111	0.064	0.074	0.046	-0.036	0.456	0.649	Not Supported
PC -> UB	0.022	0.054	0.045	0.047	0.023	0.300	0.764	Not Supported
TC -> BI	-0.021	0.058	0.058	0.052	0.079	0.921	0.357	Not Supported
TC -> UB	0.226	0.054	0.419	0.047	0.192	2.480	0.013	Supported *
BI -> UB	0.313	0.089	0.194	0.063	-0.119	1.080	0.281	Not Supported

Note: Behavioral Intention (BI), Effort Expectancy (EE), Facilitating Conditions (FC), Habit (HA), Hedonic Motivation (HM), Privacy Concern (PC), Performance Expectancy (PE), Social Influence (SI), Technology Cluster (TC), Trust (TR), Use Behavior (UB)

p⁽¹⁾ = Path Coefficient (Male), p⁽²⁾ = Path Coefficient (Female), Se = Standard Error

4.2. Education Level moderator analysis

Table 2 displays the results of a PLS-MGA analysis into the moderating effect of education level, as suggested by [29]. This finding indicates that education levels only moderate the relationship between Facilitating Conditions and SNS Use Behavior and also between Habit and SNS Use Behavior. As a result of the first moderating effect, the path coefficient value between Facilitating Conditions and SNS Use Behavior was 0.048 for the group of bachelor's degree students and 0.255 for the group of diploma degree students. Diploma students had a higher path coefficient than bachelor's degree students. The p-value of 0.010 shows that the effect of education level on Facilitating Conditions and SNS Use Behavior is statistically significant. This finding substantiates the moderating effect of education level on this relationship, demonstrating that Facilitating Conditions are more associated with SNS Use Behavior for diploma students.

The second moderating effect on Habit and SNS Use Behavior yielded path coefficient values of 0.246 for bachelor students and 0.031 for diploma students. Bachelor's degree holders had a higher path coefficient than diploma holders. The correlation between the level of education and SNS use behaviour is statistically significant ($p = 0.020$). This finding demonstrates that education level moderates this association, which demonstrates that Habit is more connected to the SNS Use Behavior for bachelor students.

Table 2. PLS-MGA Results for Education Level Moderating Effect

Paths	Bachelor		Diploma		Bachelor Vs Diploma			
	p ⁽¹⁾	Se p ⁽¹⁾	p ⁽²⁾	Se p ⁽²⁾	p ⁽¹⁾ - p ⁽²⁾	t-Values	p-Values	Sig.Level
PE -> BI	0.016	0.052	-0.114	0.062	0.130	1.615	0.107	Not Supported
EE -> BI	0.117	0.059	0.120	0.071	-0.003	0.035	0.972	Not Supported
SI -> BI	0.057	0.057	0.021	0.058	0.036	0.445	0.657	Not Supported
HM -> BI	0.239	0.065	0.130	0.065	0.110	1.185	0.237	Not Supported
FC -> BI	0.046	0.065	0.094	0.069	-0.048	0.504	0.614	Not Supported
FC -> UB	0.048	0.046	0.255	0.068	-0.207	2.578	0.010	Supported*
HA -> BI	0.298	0.066	0.354	0.063	-0.056	0.604	0.546	Not Supported
HA -> UB	0.246	0.060	0.031	0.071	0.215	2.329	0.020	Supported*
TR -> BI	0.136	0.051	0.204	0.050	-0.068	0.944	0.346	Not Supported
TR -> UB	-0.012	0.049	0.123	0.056	-0.134	1.811	0.071	Not Supported
PC -> BI	0.075	0.056	0.139	0.046	-0.064	0.859	0.391	Not Supported
PC -> UB	0.023	0.047	0.089	0.056	-0.067	0.923	0.356	Not Supported
TC -> BI	0.049	0.059	-0.001	0.050	0.050	0.636	0.525	Not Supported
TC -> UB	0.383	0.048	0.298	0.056	0.085	1.160	0.247	Not Supported
BI -> UB	0.225	0.066	0.185	0.079	0.040	0.395	0.693	Not Supported

Note: Behavioral Intention (BI), Effort Expectancy (EE), Facilitating Conditions (FC), Habit (HA), Hedonic Motivation (HM), Privacy Concern (PC), Performance Expectancy (PE), Social Influence (SI), Technology Cluster (TC), Trust (TR), Use Behavior (UB)

p⁽¹⁾ = Path Coefficient (Bachelor), p⁽²⁾ = Path Coefficient (Diploma), Se = Standard Error

5. Conclusion

This paper overview the moderating effect of gender and education level on SNS acceptance among students in Malaysia's higher learning institutions. Based on the results, it can be seen that gender has a moderating effect between Technology Cluster and SNS Use Behavior more on females compared to males. This is because the experience of using similar technology has a greater impact on females using the SNS frequently. This study also showed that the level of education significantly moderated some of the relationships between the factors. The results demonstrated that Facilitating Conditions are more associated with SNS Use Behavior for diploma students than bachelor students. This may be due to the fact that diploma students are more concerned about access to technical help, the reliability of Internet bandwidth, and the availability of ICT infrastructure, which according to [13], were all found to have a big impact on users' strong tendency to SNS. As for Habit, higher levels of education, which is bachelor students, were shown to have a more significant impact on the correlation between Habit and SNS Use Behavior. This is expected because they might have more experience using the SNS which resulted in becoming a Habit. There are some limitations to our study that could lead to interesting future research. For future work, it is recommended to explore other moderators such as experience and age as recommended in UTAUT2 study. Apart from that, this study is from the perspective of higher learning institutions in

Malaysia. It would be recommended to see other perspectives such as higher learning institutions in other countries or schools in Malaysia.

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