Factors Influencing the Academic Use of Social Networking Sites among Students in University of Kotli, AJK, Pakistan

Nadeem Anjum
Department of Library and Information Sciences,
Allama Iqbal Open University, Islamabad, Pakistan
anjumnadeem24@gmail.com

Munazza Jabeen
Department of Library and Information Sciences,
Allama Iqbal Open University, Islamabad, Pakistan
munazza.jabeen@aiou.edu.pk

Abstract

The purpose of this study is to explore the determinants that predict the academic use of SNSs among University of Kotli, AJK students. It analyzes important predictors and intends to suggest how SNSs can facilitate better learning and enhance the results of our educational efforts. In particular, it investigates how PU and PEOU influence students' behavioral intentions to use and actual usage of SNSs for academic purposes. With reference to the TAM3, seventeen hypotheses were proposed.

A self-administered questionnaire was distributed to 367 students selected by random method. All items were scaled using 5-point Likert scale. Visits to classrooms and libraries were used to augment survey completion. A pilot was performed to check reliability and validity prior to full-scale data collection. Scales were developed and items analyzed using SPSS version 22, while testing of the hypotheses was done by structural equation modeling as well as confirmatory factor analysis through AMOS version 24.

Fifteen of the seventeen hypotheses were confirmed. PU-related factors (i.e., subjective norm, image, job relevance, output quality and result demonstrability) were also statistically significant. Both PU and PEOU affected BI to use SNSs for academic purpose which in turn impacted actual usage, with the support of TAM3. Two hypotheses were not supported, including the impacts of computer anxiety and direct effect between objective usability and PEOU. While PEOU is still a crucial factor, several external motives may affect students' intentions and their academic use of SNSs.

This study provides empirical evidence on the predictors of academic SNS use in university students of AJK. The results offer a basis for the formulation of institutional strategies and programs to improve learning through digital media in Pakistan.

The study has several limitations. It was, in the first place, a single area study and therefore not generalizable while further studies at other universities should be conducted within the country. Second, differences across disciplinary use of SNS were not explored; such comparison by academic major might provide a more nuanced picture. Lastly, we did not consider the effects of cultural values and personal level factors on SNS adoption and future research may pay attention to these dimensions.

Keywords

Social Networking Sites, Technology Acceptance Model (TAM3), University library, Pakistan, Subjective Norm, Job Relevance

Introduction

Technology has come a long way from the early 21st century, when desktop computers were in use and mobile phones had buttons. Once an exclusive club, the Internet is now largely available where even far-flung corners of developing nations are being connected (Jabeen et al., 2020). This evolution has changed communication and media consumption, as well as education, transforming them into new possibilities of communication and acquisition of knowledge. This is a positive change, and we are optimistic in the field of education about a future that's more networked and informed (McGloin & Eslami, 2015).

Businesses and schools have moved online, several depending on social networking sites (SNSs) for communication and learning. In a global context, SNSs have transformed from being socialization tools to mechanisms facilitating essential exchange of information and marketing for universities (McGloin & Eslami, 2015). This change has not only made mobile phones indispensable tools for communication (youth are the biggest users) but also allowed educators to use them for more creative educational activities. With the advent of COVID-19, reliance on mobile phones and SNSs for education has also risen making us realize the potential of these platforms in education (Jabeen, 2024; Suárez-Lantarón et al., 2022).

Technology in education improves learning environments and student engagement. The Internet is an important source for academic achievement and peer support (Ahmad et al., 2017). Social media, which is an ICT application, presents impact on human interaction and sharing of information. SNSs use has increased because of web 2.0 technologies and smartphones that have influenced education with academic interest (Dhume & Dirsant, 2020). With the introduction of SNSs, educational institutions help in communication and collaborative learning through which students can share content, exchange ideas, and work together on assignments leading to an improved understanding of the course material (Alaslani & Alandejani, 2020).

This research seeks to investigate the mechanisms that lead students to adopt and use SNSs for learning, with the goal of enhancing teaching approaches and student performance.

Social Networking Sites

Social media platforms (SNSs) such as Facebook, YouTube, Twitter and Instagram are the basic tools for students' learning and communication. Such networks allow users to act as their own profile creators and connect via common interests (Belanger, et al., 2014). They make the development of online communities possible and global networking more powerful (Fasae & Adegbilero-Iwari, 2016; Liu et al., 2018). In education, SNSs are vital due to their changing role in alternative learning processes and for documenting moments of educational use (Karim et al., 2019). The popularization of smartphones has also favored the integration of SNS into education, becoming one of the main means for communicating and learning (Suárez-Lantarón et al., 2022). The internet and SNSs also influence on studying activities, social relationship, academic achievements and e-learning (Ahmad et al., 2017). These platforms enable students to create associations, exchange information and participate in educational activities that can enrich their learning (Raza et al., 2020). Facebook, particularly, is determined to be beneficial for teaching and learning because of its user-friendly platform which could be accessed on multiple devices (Karim et al., 2019). Studying emphasizes the role played by platforms like Facebook and Twitter for accessing educational resources and promoting learning activities (Li et al.

SNS are central to students' academic lives, as they provide vibrant and interactive learning spaces contributing towards educational outcomes (Bhatti et al., 2020). Their importance in the field of education is increasingly being recognized by serving as communication and academic developing tools.

Use of TAM in SNSs Research

Ismail et al. (2023) attempted to gain a deeper understanding of the drivers for young individuals' self-disclosure in social media. The Technology Acceptance Model (TAM) and the Theory of Planned Behavior (TPB) are integrated in the model to investigate determinants of online self-disclosure on SNSs.

Unal and Uzun (2021) examined the factors influencing students' behavioral intentions to use Edmodo, one of the prominent educational social networks. Drawing upon an extended technology acceptance model framework, they analysed quantitative responses to the questionnaire formative to 218 undergraduates of Edmodo-supported courses. Data analysis was conducted using partial least squares structural equation modelling. Results indicated that the intention antecedents were significant

predictors of the intention. More specifically, attitude had the highest effect, and PU only played a slight impact on ability to forecast intention. PEOU also indirectly impacted intention through attitude aside from direct effect on PU.

Significance of Study

The study explores the utilization of social networking sites (SNS) by students in the University of Kotli, AJK, for academic purposes. Its significance is further reflected as, although technology use in the learning process has reached a level of saturation in many educational systems (see Liu & Liang, 2016), AJK region has not been explored at all regarding this matter. These findings would also contribute to enriching the current status of SNS in education and give some suggestions for educational institutions. This research, in harmony with the findings of Al-Rahmi et al. (2018), also explored the antecedents, such as perceived ease of use and social influences on learners' intention to use SNS for learning. This research is important for narrowing gaps in the use of SNS for educational purposes.

Findings from the study contribute to the generation of evidence regarding the aspects affecting university students' uses of SNS.

Literature Review

Humida and Al Mamun (2021) also discovered that perceived usefulness and positive attitude towards technology influenced directly the use of social media for academic purposes as well as behavioral intention. In the same vein, Athukorala (2018) found that use of SNS which measures with a sample size 425 students both local and international studying at Wuhan University can significantly influence different academic and social variables. In Malaysia, Jan et al. (2015) estimated that both the social and technological aspects have a strong effect on Muslim students' SNSs usage by using structural equation model. Liu et al. (2018) also found that perceived enjoyment, perceived usefulness, and social influence have positive effects on Chinese students' intention to use SNSs. Masrom et al. (2021) pointed out in an overview of the student behavior literature in SNSs, some main research trends including academic intent, cyber victimization and addiction, personality factors and knowledge sharing to the impact of online social networks on academic performance.

SNSs are web-based communication technologies that could facilitate interactive learning even if being in a physical distance. Adding SNSs to DE promotes students' sense of community, informational exchange, exploration and satisfaction which in turn enhances learning achievement (Lau, 2012). In Zimbabwe, however, Ngonidzashe (2013) found out security risks, misuse and antisocial behaviors as the issues to deal with from news feed when students in general seem to have

positive attitude toward SNSs. Jabeen et al., in a cross-national analysis (2020) among Pakistani and Chinese students had reported that perceived ease of use, perceived usefulness, perception of enjoyment and system use significantly affect the students' intention to share personal information on SNSs with interesting cross-culture differences based on TAM and ISM models.

Use of Social Media in Educational Institutions

Schools increasingly see the educational potential of SNSs (Peruta & Shields, 2017). Universities through social media such as Facebook, WhatsApp and Twitter are effectively being harnessed for coordination, information sharing and academic debate among students. With a quasi-experimental design, Cetinkaya (2017) found that the inclusion of WhatsApp and its use in classroom activities enhanced students' perceptions about the learning process and their attitudes. Athukorala (2018) also detected the popularity of SNSs in academic settings; it was reported that students use them for professional networking, staying in touch with peers and staff, finding research work and enhancing their academic productivity.

Khan et al. (2021) found trust as an important determinant of consumers' acceptance of SM in the context of government services in Pakistan, further illustrating the importance and applicability of such contextual and cross-cultural elements to SNS. Even though, SNSs are popular among students, few studies have been carried out in developing counties on determining factors affecting academic utilization.

Impact of Social Networking Sites on Learning

Barabadi et al. (2022) employed TAM3 model and perceived usefulness and perceived ease of use are found to have significant effects on students' behavioral intentions toward the use of SNSs for educational purposes, leading to better academic performance. Bhattarai & Maharjan (2020) stated: computer self-efficacy, social influence, infrastructure availability, system access ability, and enjoy themselves as significant determine perceived ease-of-use for digital learning systems.

WhatsApp has become a popular learning tool. Ajani & Khoalenyane (2023) found that students and lecturers increasingly use WhatsApp for academic discussions, sharing of documents and communication all in all leading to better teamwork and learning outcomes. Boruzie et al. (2022) applied TAM3 and verified that ease of use, usefulness, enjoyment, subjective norms, user satisfaction significantly have positive influence on students' attitude toward the use of SNSs in collaborative learning and implied that users can promote their academic achievement.

Liu et al. (2018) also investigated SNS acceptance behaviour in the context of Chinese students and concluded that perceived enjoyment, perceived usefulness, and social influence positively

influence intentions to use SNSs, which is of theoretical implications for both practitioners who are providing SNS service and trying to develop users' usage habits. Choi and Chung (2013), In the same line, found that social capital and subjective norms positively influence towards SNS acceptance, while perceived usefulness and perceived ease of use exert very strong effects on users' intention to adopt such systems.

Li et al. (2021), with Chinese higher education as the context, suggest that social media use is associated with academic performance positively and that academic integration partially mediates this relationship. Niu (2019) examined Facebook's educational capacity, claiming that it is conducive to scholarly like communication and student-centred learning; yet less research has been done in terms of its functions as a LMS particularly when promoting DIALOG. By contrast, AlQarni (2021) also alleges that social media has a negative influence on academic performance in Riyadh, Saudi Arabia where procrastination and addiction to social media mediate the relationship.

Table 1: Summary of Research Related International Studies

Authors	Objectives	Methods	Findings	Originality
Ali et al. (2017) Malaysia	To determine the present usage and look at what influences students' decision to utilize social media for academic purposes.	TAM 2, UTAUT	The main elements that influence students to utilize this platform for academic purposes are PU, SN, and information quality.	This study suggests some suggestions to reduce diversion of SNSs from effective learning.
Barabadi, et al. (2022) Iran	To analyze the factors influencing social networking site adoption and educational usage, as well as how this use affects academic achievement.	TAM 3	The desire to utilize social networking sites for information exchange is directly and positively impacted by PU, PEU, system utilization and perceived engagement.	This research provides agricultural academic authorities with new opportunities to increase the use of SNS in academia.
Bhattarai and Maharjan (2020) Nepal	To ascertain how students perceive the use of digital transformation in teaching and learning across a range of academic levels.	TAM 3	There is a significant connection between social influence and accessibility, CSE, infrastructure, enjoyment and PEU of the digital learning system.	Provide practical advice that can direct the creation of policies and infrastructure that are helpful.
Choi and Chung (2013). USA	To determine the underlying causes and causal chains that influence behavioral intention to use SNS.	TAM2	The results showed that PEU and PU had a substantial impact on a user's inclination to use SNS.	It provides a substantial contribution to the current discussion on the adoption and acceptance of technology in the context of modern digital communication platforms.
Humida and Al Mamun (2021) Bangladesh	To investigate key variables that significantly influence how university students behave and use social media for learning.	TAM / SEM	Students' attitudes about using social media for academic reasons are directly influenced by PU and PEOU, while the actual system is significantly influenced by BI.	This article adds to the body of literature by providing a thorough analysis of the use of social media for academic objectives.
Jabeen, et al. (2020). China	To investigate how contextual factors, such as system use and perceived engagement, affect students' information sharing on SNS.	TAM/ PLS SEM	The desire to use social networking sites for information exchange is positively and directly influenced by PU, PEU, interactions, and system utilization.	This study offers a cross-cultural analysis of the impact of social networking sites on information sharing among library users, which has the potential to enhance the body of

literature. The intellectual significance of your study is reinforced by the integration of SEM technique with cross-cultural analysis.

Author (Year)	Purpose	Method	Findings	Implications
Arif et al. (2022)	To explore the elements influencing how students share their knowledge through SMTs.	Quantitative survey	Students used SMTs for knowledge sharing's attitude, social norms, and enjoyment of helping others drive behavior intention.	Knowledge sharing is not influenced by teacher support. It is discovered that behavior intention is the most important element among those examined to predict students' knowledge sharing.
Kokab et al. (2023)	To investigate the elements influencing Pakistani university librarians' usage of social media.	UTAUT	The behavioral intention of librarians to use social media is significantly influenced by effort expectancy, performance expectation, and social influence.	
Sabir et al. (2013)	To ascertain the elements deemed essential for Facebook usage and acceptance among Pakistani students	TAM, TRA, TBP	There was no proof that the TAM and TRA's PENJ, PEU, news, and attitude" components were related to one's desire to use Facebook. It was shown that PU and social norm were the most important factors.	This research has some valuable theoretical and practical implications for librarians and university administration
Tareen, and Jabeen, (2019)	To examine the extent to which ICT is being used, adopted, and the difficulties it presents from the viewpoints of students in Baluchistan's higher education institutions.	Quantitative survey	The students are highly using social media for educational purposes with limited available resources.	This study offered a framework for comprehending the various Facebook adoption determinants in Pakistan. The study recommended some valuable suggestion for Baluchistan and Pakistan to improve usage of ICT in Higher Education.
Waqas et al. (2016)	To investigate the effects of social media use on the academic performance of Lahore, Pakistan's university students.	Cross sectional survey	The use of several social networking sites by university students in Lahore, Pakistan has a detrimental impact on their behavior and academic achievement.	The government should make progress in regulating and limiting the use of SNS in educational institutions.

Statement of the Problem

On the current educational landscape, Social Network Sites (SNSs) are viewed as invaluable to university students who use them for networking, information, and joining the academic community. Adoption of SNSs has been investigated by researchers in many countries, such as Iran (Barabadi et al., 2022), Nepal (Bhattarai & Maharjan, 2020), The United States (Choi & Chung, 2013), Bangladesh (Humida & Al Mamun, 2021) China and Pakistan (Jabeen et al., 2020; Sabir et al., 2013). However, there is scarce information available about specific factors that influence the use of SNSs for academic purposes among university students, particularly in the context of AJ&K, Pakistan. This study, with its unique application and its focus on the University of Kotli, holds out hope for filling such gaps and introducing exciting new potential to this field.

Prior studies from Pakistan have largely addressed the adoption of general SNS, mostly restricted to platforms such as Facebook (Sabir et al., 2013), and employed earlier TAM styles (Karim et al., 2019). For the academic use of SNSs, similar studies with TAM3 model (a more extended version and updated model of TAM) can be carried out more in this area. This gap is attempted to be addressed in this research by the investigation of determinants of students' usage behavior for Academic Purposes (SNSs) among students at the University of Kotli, AJK. Knowledge of these properties is important for educators and policymakers wishing to enhance teaching practices and student learning outcomes. This research aims to contribute to the educational system of the University of Kotli, AJK. Using the TAM3 model by giving a fresh perspective and much needed information in already established literature.

Research Objectives

With these precise objectives in mind, this research will examine the factors that affect students' embrace of social networking sites for their learning purposes based on the TAM 3 model.

1. To evaluate the relationship between social influence processes (image, subjective norms) and perceived usefulness by using SNSs.

2. To analyze the relationship between cognitive instrumental processes (resulting in demonstrability, output quality, and job relevance) and perceived usefulness by using SNSs.

3. To check the relationship between anchor factors (computer anxiety, perception of external control, computer self-efficacy, and computer playfulness) and perceived ease of use using SNSs.

4. To investigate the relationship between adjustment factors (objective usability, perceived enjoyment) and perceived ease of use by using SNSs.

5. To test the relationship between students' behavior and intention toward the intention to use SNSs for academic purposes.

Conceptual model and Hypothesis Development

The researchers sought to examine the different determinants that could impact the academic use of SNSs from the point of view of TAM 3. Seventeen variables are included in the model suggested to determine how SNSs will be used for academic purposes. The study presents the theoretical basis underlying each of these associations. The research framework is shown in Figure 1, and Appendix 1 contains the measurement items used in the survey.

In our structural equation model, the interactions between exogenous constructs (independent variables) and endogenous (dependent variables) are well defined, with no extra impacts from other constructs. Exogenous constructs, including SN, IMG, REL, OQ, RD, PU, CSE, PEC, CANX, CPLY, PENJ, OU, PEOU, BI, and IU, are directly quantified by their observable indications.

Multiple exogenous factors, including SN, IMG, REL, OQ, RD, and PEOU, influence the endogenous latent construct of perceived usefulness (PU). The path coefficients ($\beta30$, $\beta78$, $\beta13$, $\beta63$, and $\beta16$) indicate the intensity and direction of the correlations between exogenous components and PU. The exogenous variable Social Norm (SN) strongly influences Image (IMG), as seen by the path coefficient $\beta37$.
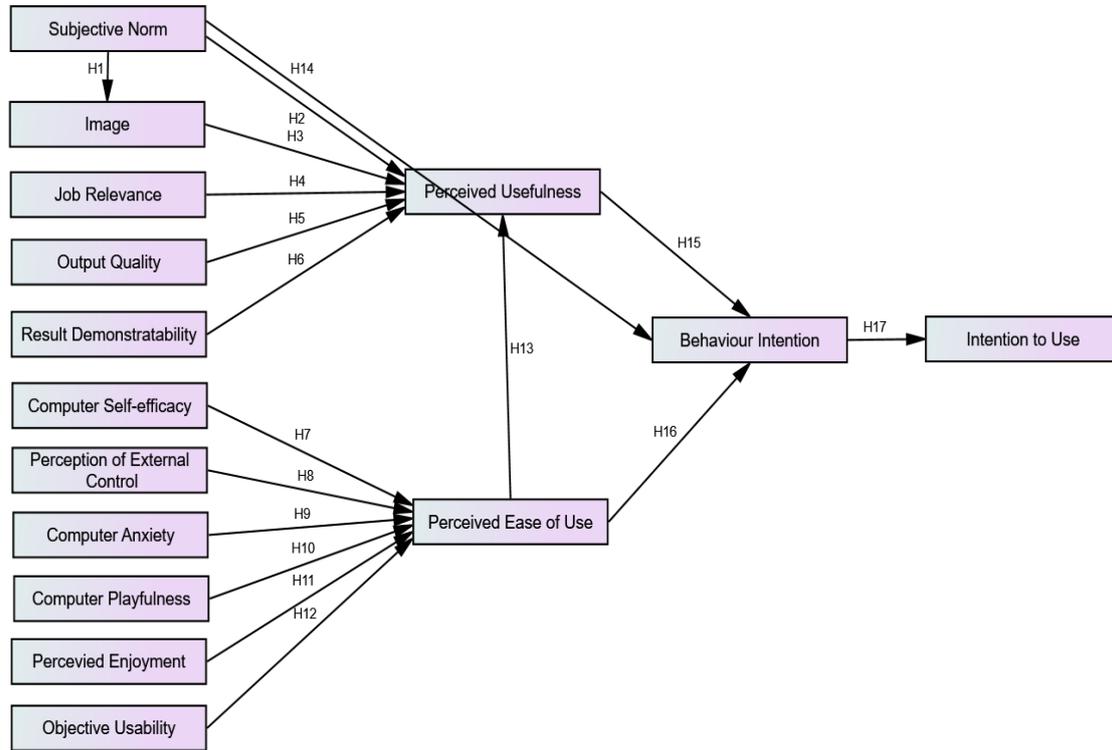
Figure 1: Theoretical Framework

Exogenous constructs CSE, PEC, CANX, CPLY, PENJ, and OU all impact perceived ease of use (PEOU). The path coefficients $\beta 59$, $\beta 43$, $\beta 01$, $\beta 67$, $\beta 36$, and $\beta 06$ indicate the strength and direction of the effects. SN, PU, and PEOU impacted behavioral intention (BI) with path coefficients of $\beta 20$, $\beta 26$, and $\beta 34$, respectively. The route coefficient $\beta 16$ indicates a strong link between BI and intended use (IU). Factor loadings reveal the strength of the correlations between observable variables and latent components. This complete model enables a detailed understanding of the variables impacting university students' usage of social networking sites (SNSs) for academic purposes, notably at the University of Kotli (AJK). This knowledge is critical for educators and policymakers working to improve teaching methods and student learning outcomes. The objective of fitting a model in AMOS-SEM was to determine path coefficients (β), the estimates of latent variables, and error terms (z) that best fit the observed indicators with their underlying constructs. This process enables researchers to assess and interpret the hypothesized relationships among the constructs in their model. This framework will produce the best study findings by precisely representing the direct links between observable indicators and constructs.

The path coefficients SN, IMG, REL, OQ, RD, PU, CSE, PEC, CANX, CPLY, PENJ, OU, PEOU, BI, and IU for this study are further explained below.

H1: Subjective norm has a positive influence on image for academic use of SNSs among university students.

After the establishment of appropriate discriminant validities, structural equation modelling (SEM) was used to assess the proposed model through AMOS 24 and results are presented in detail. Direct relationship between SN and IMG was tested (Hypothesis 1). The results confirmed this relationship, as indicated by the regression coefficient (β=.37**, SE= .06, CR= 5.77, p < .001).

H2: Subjective norm has positive influence on perceived usefulness for academic use of SNSs among university students.

Hypotheses 2 was analyzed to check the direct influence between SN and PU. The results proved this relationship as indicated (β=.30**, SE= .05, CR= 4.9, p < .001).

H3: Image has positive influence on perceived usefulness for academic use of SNSs among university students.

Hypothesis 3 states that IMG is positively related to PU. Results confirmed this relationship, as shown by the regression coefficient (β=.78**, SE= .04, CR= 16.14, p < .001).

H4: Job relevance has positive influence on perceived usefulness for academic use of SNSs among university students.

Hypothesis 4 states direct influence between REL and PU as shown by the regression coefficient (β=.13**, SE= .05, CR= 5.32, p < .001).

H5: Output quality has positive influence on perceived usefulness for academic use of SNSs among university students.

Hypothesis 5 states direct influence between OQ and PU as indicated by the regression coefficient (β=.63**, SE= .04, CR= 17.75, p < .001).

H6: Result demonstrability has positive influence on perceived usefulness for academic use of SNSs among university students.

Hypothesis 6 states direct influence between RD and PU as indicated by the regression coefficient (β=.38**, SE= .06, CR= 6.5, p < .001).

H7: Computer self-efficacy has positive influence on perceived ease of use for academic use of SNSs among university students.

Hypothesis 7 claims direct influence between CSE and PEOU as indicated by the regression coefficient (β=.59**, SE= .05, CR= 9.97, p < .001).

H8: Perception of external control has positive influence on perceived ease of use for academic use of SNSs among university students.

Hypothesis 8 describes direct influence between PEC and PEOU as indicated by the regression coefficient (β=.43**, SE= .05, CR= 7.2, p < .001).

H9: Computer anxiety has positive influence on perceived ease of use for academic use of SNSs among university students.

Hypothesis 9 states direct influence between CANX and PEOU, but the result has denied this relation as indicated by the regression coefficient (β=.01**, SE= .01, CR= .14, p > .05).

H10: Computer playfulness has positive influence on perceived ease of use for academic use of SNSs among university students.

Hypothesis 10 states direct influence between CPLY and PEOU as indicated by the regression coefficient (β=.67**, SE= .04, CR= 14.71, p < .001).

H11: Perceived enjoyment has positive influence on perceived ease of use for academic use of SNSs among university students.

Hypothesis 11 states direct influence between PENJ and PEOU as shown by the regression coefficient (β=.36*, SE= .06, CR= 6.32 p < .01).

H12: Object usability has positive influence on perceived ease of use for academic use of SNSs among university students.

Hypothesis 12 states direct influence between OU and PEOU, but this relation is rejected by the results as indicated by the regression coefficient (β=.09**, SE= .05, CR= 1.31, p >.05).

H13: Perceived ease of use has positive and direct influence on perceived usefulness for academic use of SNSs among university students.

Hypothesis 13 states direct influence between PEOU and PU as indicated by the regression coefficient (β=.16*, SE= .06, CR= 2.44, p < .01).

H14: Subjective norm has positive influence on behaviour intention for academic use of SNSs among university students.

Hypothesis 14 states direct influence between SN and BI as specified by the regression coefficient (β=.20*, SE= .05, CR= 3.20, p < .01).

H15: Perceived usefulness has positive influence on behaviour intention for academic use of SNSs among university students.

Hypothesis 15 states direct influence between PU and BI as directed by the regression coefficient (β=.26**, SE= .04, CR= 4.56 p < .001).

H16: Perceived ease of use has positive influence on behaviour intention for academic use of SNSs among university students.

Hypothesis 16 states direct influence between PEOU and BI as specified by the regression coefficient (β=.34**, SE= .05, CR= 5.83, p < .001).

H17: Behaviour intention has positive influence on intention to use for academic use of SNSs among university students.

Hypothesis 17 states direct influence between BI and IU as shown by the regression coefficient (β=.16*, SE= .05, CR= 2.96, p < .01).

Research Methodology and Framework

Data was collected by distributing the questionnaires among BS, Master, MS, / MPhil and PhD program students. The researcher personally visited classrooms and libraries of different faculties to collect information. All available sources were applied to get a valuable response from the participants. The data was collected by using a random sampling technique. The structured instrument, usually used in normative surveys, was the primary tool to collect the data. It consists of a well-organized set of questions to get responses from the participants to gain relevant information.

After reviewing the relevant literature, a questionnaire was developed (Appendix A). The questionnaire was completed after extensive consultation with the research supervisor. It was organized in two parts: the first part included items related to respondents' demographic details, while the second part comprised questions derived from the constructs of Technology Acceptance Model 3 (TAM3). A typical five-level Likert scale measurement tool, including strongly disagree, disagree, neutral, agree and strongly agree, was used to gain the respondents' opinions. It is necessary to apply an adequate sampling formula to make the survey results more broadly. To obtain a more exact conclusion, the research used an online program called "Raosoft" to calculate the sample size, or "n". The foundation of this online software is based on the following formula which explains.

$$X = z(^c/_{100})^2 r(100-r)$$

$$n = {}^{NX}/_{((N-1)E^2 + X)}$$

$$E = Sqrt[{}^{(N-n)x}/_{n(n-1)}]$$

Where Z(c/100) is the critical value for the confidence level c, N is the population size, and r is the fraction of responses being studied. According to this online software formula, n=367 students were taken as a research sample out of N=7729 ("Raosoft" n.d.).

Data Analysis

This study's findings were assessed using the Structural Equation Model. SPSS22 and AMOS 24 were used to code and analyze the collected data. SPSS22 was used for descriptive statistics to determine frequency, percentage, mean and standard deviation. The demographic information (gender, age, degree level) of the respondents was determined by using a descriptive statistics frequency test in SPSS22. Descriptive statistics were utilized to measure mean, frequency and standard deviation in SPSS 22. Confirmatory Factor Analysis was analyzed by using SPSS 22 and AMOS 24. Individual measurements of all the model variables were determined using factor analysis in AMOS24. The Pearson correlation test was utilized in SPSS 22 to test the hypothesis, and the validation of the hypothesis test was used in AMOS 24.

Results

Confirmatory Factor Analysis (CFA)

Table 2 presents the confirmatory factor analysis. It is used to check the structure of the instruments. CFA presented Factor Loading, Cronbach Alpha, Composite Reliability (CR) and Average Variance Extracted (AVE).

Factor Loading

Factor loadings reflect the relationship between observed indicators and the latent factors represented in confirmatory factor analysis (CFA). They show the extent to which each observed variable relates to the associated latent factor. This study has fifteen variables and sixty constructs. Factor loading of these constructions is between 0.52 and 0.88 except one construct. Most of the factor loadings (59 out of 60) fall within an acceptable range, suggesting a model that fits well overall. Nonetheless, the variable that has a factor loading lower than 0.52 needs to be thoroughly examined and possibly adjusted or removed to improve the model's overall strength and validity. This process ensures that each item has a strong relationship with its individual factor, leading to the CFA being more reliable and valid.

It indicates the factors loading range from 0.52 to 0.88, which implies most of the items are adequate measures for their latent construction but there is the potential to improve some,

particularly those with lower values. If you ensure that all your indicators have strong ties to their latent variable, your model will end up being more reliable and valid.

Cronbach Alpha

Cronbach's alpha values for the 15 variables in the confirmatory factor analysis were within range of 0.778-0.867, suggesting that the items show strong internal consistency (i.e., good - acceptable). This inspires faith in the constructions under investigation. However, there is room for improvement, particularly with respect to the variables at the lower end of the spectrum to increase internal consistency and measurement precision of underlying constructs.

Composite Reliability (CR)

For all variables, CR estimates varied between 0.72 and 0.80. These values suggest that the measurement model demonstrates acceptable internal consistency for all 15 variables. This indicates that most of the items employed to measure the latent constructions are reliable and consistent. The measurement model has an overall good internal solid consistency for all variables under scrutiny and hence second order availability is validated.

Average Variance Extracted (AVE)

The AVEs for all 15 variables range from 0.50 to 0.62 indicating that the measurement model adequately represents the underlying dimensions with minimal measurement error. This demonstrates the reliability and effectiveness of the model. However, constructs with lower AVE can be enhanced to increase the precision of construct measurement.

Table 2: Confirmatory Factor Analysis (CFA)

Construct	Factor Loading	Alpha	CR	AVE
PU		0.837	0.79	0.56
PU1	0.74			
PU2	0.84			
PU3	0.68			
PU4	0.75			
PEOU		0.797	0.78	0.5
PEOU1	0.68			
PEOU2	0.7			
PEOU3	0.73			
PEOU4	0.72			
SN				
SN1	0.63	0.77	0.77	0.45
SN2	0.7			

SN3	0.73			
SN4	0.64			
IMG		0.787	0.69	0.48
IMG1	0.59			
IMG2	0.73			
IMG3	0.68			
IMG4	0.77			
REL		0.82	0.81	0.67
REL1	0.9			
REL2	0.9			
REL3	0.88			
REL4	0.57			
OQ		0.819	0.7	0.53
OQ1	0.62			
OQ2	0.68			
OQ3	0.67			
OQ4	0.88			
RD		0.834	0.78	0.56
RD1	0.78			
RD2	0.81			
RD3	0.75			
RD4	0.66			
CSE	0.68	0.799	0.72	0.5
CSE1				
CSE2	0.73			
CSE3	0.72			
CSE4	0.69			
PEC		0.794	0.72	0.5
PEC1	0.75			
PEC2	0.78			
PEC3	0.76			
PEC4	0.52			
CPLY		0.804	0.72	0.51
CPLY1	0.8			
CPLY2	0.71			
CPLY3	0.69			
CPLY4	0.65			
CANX		0.867	0.76	0.62
CANX1	0.77			
CANX2	0.76			
CANX3	0.8			
CANX4	0.82			
PENJ	.	0.778	0.72	0.5

PENJ1	0.85			
PENJ2	0.76			
PENJ3	0.72			
PENJ4	0.41			
OU		0.833	0.74	0.55
OU1	0.69			
OU2	0.77			
OU3	0.81			
OU4	0.71			
BI		0.852	0.79	0.59
BI1	0.7			
BI2	0.87			
BI3	0.83			
BI4	0.68			
IU		0.847	0.8	0.6
IU1	0.62			
IU2	0.71			
IU3	0.88			
IU4	0.86			

Validation of Hypotheses

Table 3 summarizes estimates of path coefficients (β) and their associated levels of significance in our proposed model that was developed to explore determinants of the academic use SNSs among university students. The hypotheses tested and their outcomes are shown:

H1: Subjective norm (SN) positively influences image (IMG) (β = .37, SE = .06, CR = 5.77, p < .001).

H2: SN positively influences perceived usefulness (PU) (β = .30, SE = .05, CR = 4.9, p < .001).

H3: IMG positively influences PU (β = .78, SE = .04, CR = 16.14, p < .001).

H4: Job relevance (REL) positively influences PU (β = .13, SE = .05, CR = 5.32, p < .001).

H5: Output quality (OQ) positively influences PU (β = .63, SE = .04, CR = 17.75, p < .001).

H6: Result demonstrability (RD) positively influences PU (β = .38, SE = .06, CR = 6.5, p < .001).

H7: Computer self-efficacy (CSE) positively influences perceived ease of use (PEOU) (β = .59, SE = .05, CR = 9.97, p < .001).

H8: Perception of external control (PEC) positively influences PEOU (β = .43, SE = .05, CR = 7.2, p < .001).

H9: Computer anxiety (CANX) does not significantly influence PEOU (β = .01, SE = .01, CR = .14, p > .05).

H10: Computer playfulness (CPLY) positively influences PEOU (β = .67, SE = .04, CR = 14.71, p < .001).

H11: Perceived enjoyment (PENJ) positively influences PEOU (β = .36, SE = .06, CR = 6.32, p < .01).

H12: Object usability (OU) does not significantly influence PEOU (β = .09, SE = .05, CR = 1.31, p > .05).

H13: PEOU positively influences PU (β = .16, SE = .06, CR = 2.44, p < .01).

H14: SN positively influences behavioral intention (BI) (β = .20, SE = .05, CR = 3.20, p < .01).

H15: PU positively influences BI (β = .26, SE = .04, CR = 4.56, p < .001).

H16: PEOU positively influences BI (β = .34, SE = .05, CR = 5.83, p < .001).

H17: BI positively influences intention to use (IU) (β = .16, SE = .05, CR = 2.96, p < .01).

These path coefficients and levels of significance have confirmed the hypothesized links within the model, which are conclusive. They allow readers to better appreciate the relevance of multiple aspects in the academic use of SNSs by university students, drawing more attention and research into this topical area.

Table 3: Validation of Hypotheses

Sr. No	Path	Estimate	SE	CR	P Value	R^2 Individual Hypothesis	R^2 Combine Hypothesis	Result
H1	SN → IMG	.37**	.06	5.77	<.001	.08	.08	Accepted
H2	SN → PU	.30**	.05	4.9	<.001	.06		Accepted
H3	IMG → PU	.78**	.04	16.14	<.001	.42	.60	Accepted
H4	REL → PU	.13**	.05	5.32	<.001	.07		Accepted
H5	OQ → PU	.63**	.04	17.75	<.001	.06		Accepted
H6	RD → PU	.38**	.06	6.5	<.001	.11		Accepted
H7	CSE → PEOU	.59**	.05	9.79	<.001	.21		Accepted
H8	PEC → PEOU	.43**	.05	7.2	<.001	.13	.50	Accepted
H9	CANX → PEOU	.01**	.01	.14	>.05	.00		Rejected
H10	CPLY → PEOU	.67**	.04	14.71	<.001	.37		Accepted
H11	PENJ → PEOU	.36*	.06	6.32	<.01	.09		Accepted
H12	OU → PEOU	.09 **	.05	1.31	>.05	.00		Rejected
H13	PEOU → PU	.16*	.06	2.44	<.01	.02	.02	Accepted
H14	SN → BI	.20*	.05	3.20	<.01	.03	.03	Accepted
H15	PU → BI	.26**	.04	4.56	<.001	.05	.14	Accepted
H16	PEOU → BI	.34**	.05	5.83	<.001	.08		Accepted
H17	BI → IU	.16*	.05	2.96	<.01	.02	.02	Accepted

Structural Equation Model

The structural equation model emphasizes both direct and indirect effects (Figure 2). An SEM analysis of a comprehensive 15-factor integrated model was estimated in AMOS with the 65 observable variables. The model shows that both the social influence dimensions are positively related to perceived utility (PU) which is composed of subjective norm (SN) and image (IMG). Factors associated with cognitive instrumental processes, i.e., relevance (REL), result demonstrability (RD) and output quality (OQ), also show high correlations with PU, thus supporting the reliability of the model. Anchor variables such as subject-based computer self-efficacy (CSE), perceived external control (PEC), and computer playfulness (CPLY) demonstrate good performance. Computer Playfulness (CPLY) positively influences PEOU while CANX negatively impacts PEOU. Additionally, perceived enjoyment (PENJ) influences PEOU positively while object usability (OU) has a negative effect. To summarize, PEOU has an influence on PU and both PU as well as PEOU have a positive impact on BI, which in turn affects the IU. The results reported here highlight the crucial influence of social factors, user experience, and cognitive aspects on students' intention and actual use of SNSs for academic purposes.
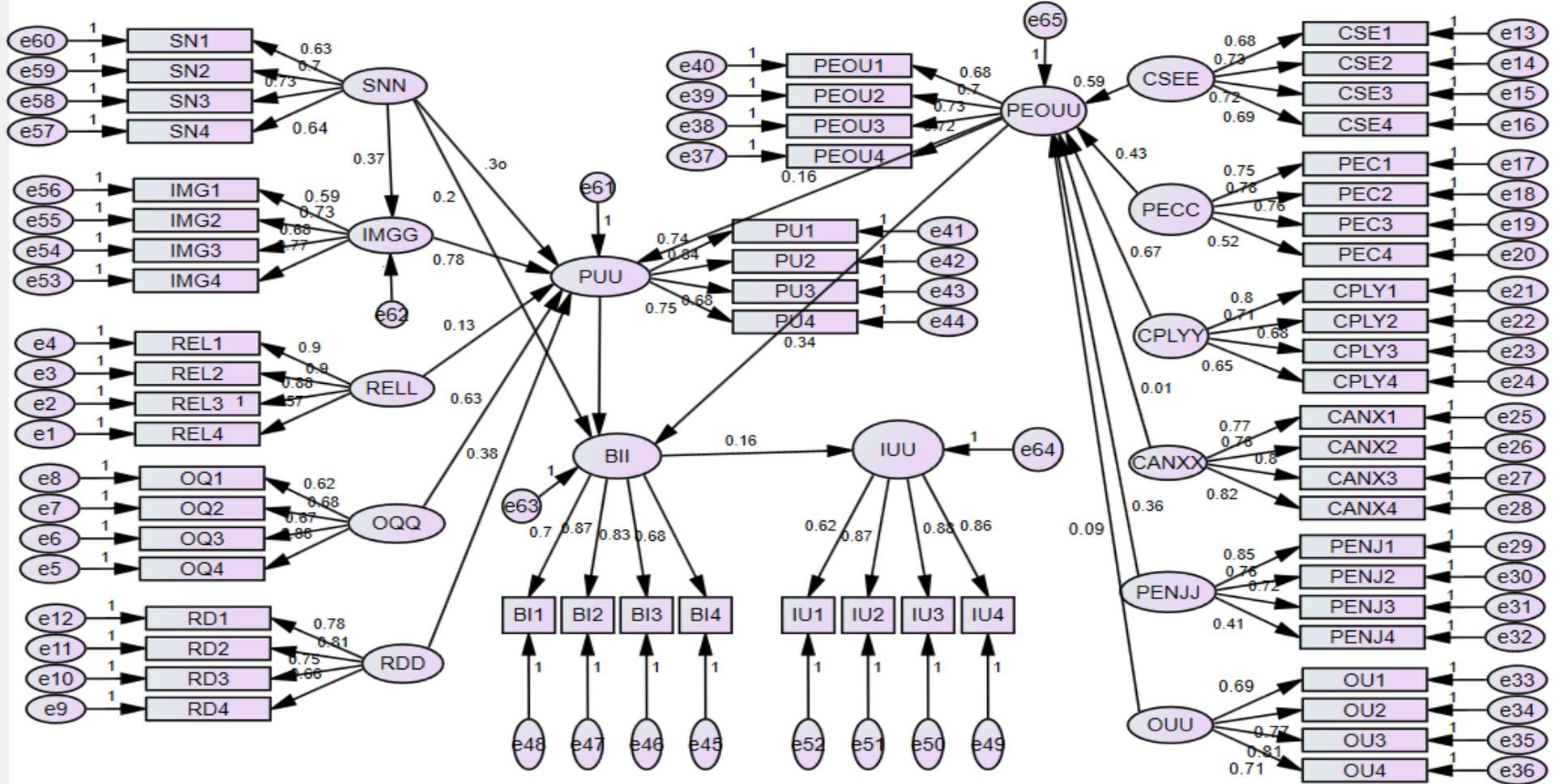
Figure 2 Structural Equation Model

Model Fit Analysis

The model fit analysis including the many fit indices is visualized in Results Table 4 and Figure 1 (Appendix B). The RMSEA (Root et al. of Approximation) of 0.06 is moderate and acceptable. The IFI (Incremental et al.) 99 indicates a very good fit, whereas TLI (Tucker-Lewis Index) = 0.90 and CFI (Comparative et al.) score of 0.921, indicating an acceptable fit. (1998) as the criterion value of CMIN/DF (Chi-square/degrees of freedom ratio), and so, when the CMIN/DF was kept at 2.32 there would be an acceptable level, over 3 acceptable although official guides prefer use of values less than three). In general, the fit indexes suggest decent fit of the model, and good fit for IFI and CFI. The RMSEA is slightly deviant only, and good indicator of model fit in other aspects. The heart of the model fit analysis is that the structural equation model fits to the data quite well. The IFI (0.99) and CFI (0.92) also show an excellent fit, meaning that the whole model adequately describes the interrelationships among the visual information variables. The TLI (0.90) also provides for sufficient fit, though the RMSEA (0.06) suggests moderate but acceptable misspecification. The ratio of CMIN/DF (2.32) also indicates a good fitness between the model and data according to its complexity. Overall, these fit indices confirm the stability and adequacy of the model in accounting for university students use of social networking sites for educational purposes.

Table 4: Model Fit Analysis

Measurement Model	Fit Indices				
	RMSEA	IFI	TLI	CFI	CMIN/DF
Complete Model	.06	.92	.90	.92	2.32

Discussion

To Evaluate the Relationship between Social Influence Process (IMG, SN) and PU by Using SNSs.

The results of hypothesis 3 present a significant relationship between IMG and PU in SNSs for academics. This finding emphasizes the significance of a technology's perceived usefulness

being so closely associated to its reputation among users. The higher the students perceive usefulness of SNSs in their academic studies, the more positive attitudes towards utilising the platforms. This result is consistent with prior studies that reveal the effect of perceived appearance of technology on its perceived value by users. (2008) Venkatesh and Bala (2008) have argued that the attitudes and intentions to use technology are dominantly framed by users' perception of technology which include functional attributes, social influences as well as symbolic meanings of using it. Barabadi et al. (2022) extend this line of argument, proposing that people typically perceive technology as objects with image to hold and these images drive their perceptions on usefulness. Therefore, the need for a sound theoretical framework to comprehend how students assess the value of SNSs in their educational activities is urgent and important. This understanding is crucial for educators and policymakers seeking to enhance the acceptance and effectiveness of social networking sites (SNSs) in academic contexts.

To Analyze the Relationship between Cognitive Instrumental Process (RD, OQ, REL) and Perceived Usefulness by Using SNSs.

The study's findings revealed the connection between PU and the cognitive instrumental process. There are three hypotheses for this goal. According to hypothesis test results, it is proved that there is a statistically significant relationship existed between REL and PU, which showed that REL improved university students' perceptions of the usefulness of SNSs for academic point of view in a positive way. In respect to the relevance of a job (study), it may be argued that students would conclude that SNSs will improve their academic performance if they believe that these platforms are conducive to learning. Furthermore, the findings demonstrated that students would view SNS to be just as beneficial for learning if they thought that they did their job adequately. The degree to which people think a certain technology is important to their work or job task   is known as job relevance. Therefore, students' perceptions of SNSs as offering a competitive advantage strengthen their conviction in the usefulness of these platforms for learning. These findings support the conclusions of Venkatesh and Bala (2008) that there is a statistically significant relationship between REL and PU. Therefore, people are more inclined to embrace and utilize technology when they believe it to be pertinent and helpful in completing their activities.

Current study proved that OQ significantly positively impacted PU. Test result revealed that a positive image associated with the academic use of SNSs influences the PU among university

students. When they perceive high-quality output and extra ordinary results in their studies from using SNSs, it enhances their belief in the platforms' practical value. The factors impacting the adoption of internet-based learning systems were investigated by Chau and Hu (2001). They discovered that people's intentions to utilize the system were highly influenced by their perception of its utility. PU in the context of learning systems was correlated with the caliber of learning outcomes, which is a type of OQ.

There was a significant relation between RD and PU. Result demonstrability positively influences college students' self-perception of usefulness, which is to present observable returns or achievements on social networking websites. Such systems offer students an interactive environment for learning that enriches their educational experience by allowing students to exchange resources, share knowledge and learn collaboratively. This is crucial to understanding how useful people think technology will be. According to Thong et al. (2006) found that consumers' intention to use e-commerce was strongly influenced by PU. A moderating variable named result demonstrability was discovered, which refers to that the greater the impact of perceived usefulness on intention to usage is, the more obvious and believable results are.

To Check the Relationship between Anchor Factors (CANX, PEC, CSE, CPLY,) and Perceived Ease of Use by Using SNSs.

The results of the study reveal a strong connection which is found between perceived utility (PU) and the cognitive instrumental process in terms of the variables work relevance (REL), output quality (OQ) as well as result in demonstrable… The strong association REL has with PU indicated that students form more positive evaluation of SNSs as tool for academic use if these applications are rele-vant to their field of study. This is in line with the expectation that students' perception of SNSs to increase their academic success is higher when they perceive these tools facilitate their learning (Venkatesh & Bala, 2008). More importantly, the study reveals that output quality has a significant impact on PU, which suggests that students' positive perceptions of academic usefulness of SNSs are strengthened when they are able to see high-quality returns in their studies after using these media. This finding is comparable with Chau and Hu's (2001) contention that users' intention to use learning systems are greatly influenced by their perception of the system as useful, often associated with quality learning. Result demonstrability is another key project characteristic that must be developed in PU. Results from the analyses revealed that

RD mediates the relationship between PU and BI. It can be explained by the finding that students' perceived utility of SNSs is enhanced when SNSs prove evidence or gain success in academic work. This dimension of technology value statement highlights the importance of tangible technological outcomes in enhancing seeming utility/power of tech-use in educational settings. According to Thong et al. (2006), PU has significant impact on the intention to use e-commerce systems moderated by result demonstrability. This suggests that the stronger is good results, the more impact perceived utility has on intention to adopt technology.

Taken together, these results underscore the importance of ensuring that ITSs are relevant, generate quality output and yield evidence of and outputs demonstrating their utility to students. This information is important for educators and policy makers working towards promoting successful use of SNSs in educational environment.

To Investigate the Relationship between Adjustments Factors (OU, PENJ) and Perceived Ease of Use by Using SNSs.

The study discovered a substantial relationship between perceived enjoyment (PENJ) and perceived ease of use (PEOU). When students love utilizing SNSs, it fosters a pleasant learning environment, resulting in increased engagement, greater cooperation, information sharing, and improved academic achievement. Enjoyment contributes a positive emotional component to how students view the ease of utilizing these platforms. This confirms Venkatesh et al. (2003), who emphasized the role of pleasure in promoting technological acceptance.

H12: OU has Positive Influence onPEOU for Academic Use of SNSs among University Students.

The hypothesis suggested that the ease of use will indirectly affect quality with respect to perceived usefulness and that object usability (OU) increases perceived ease of use (PEOU). However, the results showed no significant association between the two. Therefore, even though students may enjoy using SNSs, this enjoyment occasionally translates to perceiving these tools as easy to use for educational tasks. Emotional fulfillment from SNS abuse rather than enhancing a healthy learning atmosphere. It is lack of compatibility between SNSs and particular academic requirements and purposes that leads to the need for greater integration. This stands in sharp contrast to those of So and Kim (2009), who observed a strong impact on OU over PEOU for the m-service context.

Additionally, a significant relationship between PEOU and perceived usefulness (PU) was detected in this research. Positive experience of ease of use has a strong influence on students' perception towards academic value of SNSs. User-friendly platforms promote the easiest access to encourage active participation and enable sharing of information effectively, which has positive implications for students who can benefit from their academic experiences as well as performances. Our finding agrees with that of Venkatesh et al. (2003). who also suggested that PEOU has a significant impact on PU in technology acceptance models.

To Test the Relationship between Students' BI toward the IU SNSs for Academic Purposes.

The study discovered that subjective norms (SN) have a substantial influence on behavioral intention (BI), implying that social support from peers and instructors improves students' intent to utilize social networking sites (SNSs) for academic reasons. This is consistent with Barabadi et al. (2022), who found SN as a critical predictor of perceived usefulness (PU). The positive association between PU and BI underscores the notion that students are more inclined to utilize social networking sites for academic purposes if they find them beneficial for communication, information sharing, and collaborative learning. Additionally, perceived ease of use (PEOU) considerably impacts BI, implying that user-friendly systems improve student engagement and academic success. The study also verified the association between BI and intention to use (IU), showing that students' decisions to utilize social networking sites for educational purposes are impacted by their behavioral intentions, as corroborated by Jabeen et al. (2020) and Barabadi et al. (2022). Finally, 15 of 17 hypotheses were shown to be significant, emphasizing the relevance of these elements in the academic usage of social networking sites.

Policy Implications

The implications of this study are far-reaching and have policy implications for schools. First, the strong influence of SN on both BI and PU indicates that social influence plays a significant role in AN (academic network) -SNS adoption. Educators, therefore, should work toward creating a culture that promotes self-directed use of SNSs for learning by instructors and peers which in turn can lead to higher engagement and academic achievement. Additionally, it is important that SNS should be easily utilized and perceived to be easy to use (PEOU) because this factor significantly influences students' intention in using such tools. Institutions could provide training courses or resources to help students and staff use SNSs effectively, so they can derive

more educational benefits from them. In addition, students seem to value the utilitarian or pragmatic benefits that SNSs bring in terms of communication, information and collaborative learning and therefore policy might also integrate this platform into studies to enhance traditional teaching methods. Addressing these variables helps the schools to develop scholarly talents in a more collaborative and resourceful learning climate and eventually results in educational successes. The results may be used to develop instruments, policies and programs aimed at improving student academic achievement in Pakistan.

Conclusion

The research tested the Technology Acceptance Model 3 (TAM3) to assess elements affecting academic use of SNSs by Kotli University students in AJK. The research supported 15 of the 17 hypotheses (based on a large-scale survey and structural equal model) which confirmed essential factors that affect students' intention to use SNSs for academic purposes. Findings highlighted that perceived utility (PU), PEOU, and BI are important predictors for students' intention to use SNSs in academic activities. Particularly, social impact factors including subjective norm and image had a significant positive relation with PU, suggesting that supportive social environments were salient in enhancing students' perceptions of the academic utility of SNSs. Also, cognitive instrumental processes work relevance (S), output quality (OQ), and result demonstrability (RD) had a significant impact on PU. This would imply that students are more likely to utilize SNSs if they perceive them as relevant and beneficial to performing their academic work. Direct links between the computer anxiety factor and perceived usefulness, objective usability and perceived ease of use were not statistically significant, suggesting that although these factors are necessary there may be other context specific variables that have a potentially more profound impact on students' real use of SNSs. The results could provide useful information to educators and policy makers who are willing to promote educational performance through SNSs. They underscore the importance of fostering supportive social environments and reinforcing these technologies perceived relevance and utility in an academic context. It contributes to extant literature by constructing a more detailed account of what determines the adoption of SNSs in a developing country, and guides intervention strategies for fostering student engagement and enhancing learning outcomes through proper incorporation of social networking technologies in higher education institutions.

Limitations and Future Research

This research on determinants of academic usage of SNSs among the students at the University of Kotli, AJK also has few limitations. First, the study was conducted in a small area and therefore results may not be generalizable. Further studies require institutions of other regions in order to confirm the findings of other populations. Second, the differences in SNS use by students of other majors were not taken into consideration by the study and this might have yielded more specific findings. Subsequent work will need to address how discipline-specific requirements mediate the use of SNSs for educational purposes. Third, the association between cultural values or interests and personal traits with students' intention to use SNS were ignored. Studying these elements may reveal how they affect SNS. By exploring these concerns, such factors can be demonstrated in how they impact SNS use and academic usage, to gain a more comprehensive understanding of the various contributions towards SNS adoption within educational environments.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship and/or publication of this article.

References

Ahmad, M., Hussin, N., Zulkarnain, S., Mahdin, H., & Fudzee, M. F. M. (2017). Factors influencing the use of social media in adult learning experience. *International Conference on Softntern Computing and Data Mining* (pp. 579-588). Springer, Cham.

Ajani, O. A., & Khoalenyane, N. B. (2023). Using WhatsApp as a tool of learning: A systemic literature review of prospects and challenges. *International Journal of Innovative Technologies in Social Science*, (3 (39)).

Alaslani, K., & Alandejani, M. (2020). Identifying factors that influence students performance through social networking sites: an exploratory case study. *Heliyon*, *6*(4), e03686.

Ali, M., Raja, R. A. I. B., Nuri Al Amin, B. E., & Iftikhar, B. (2017). Determining the academic Use of Social Media with technology Acceptance Models. *NFC IEFR Journal of Engineering and Scientific Research*, *5*.

AlQarni, A. A. (2021). Investigating the impact of social media use on academic performance among university students: Evidence from Saudi Arabia. *Education and Information Technologies*, 26(2), 2101-2115.

Al-rahmi, W. M., Othman, M. S., & Musa, M. (2018). Factors influencing the usage of social networking sites for learning purposes among university students using technology acceptance model 3. *Journal of Educational Technology & Society*, 21(2), 128-139.

Arif, M., Qaisar, N., & Kanwal, S. (2022). Factors affecting students' knowledge sharing over social media and individual creativity: An empirical investigation in Pakistan. *The International Journal of Management Education*, *20*(1), 100598.

Athukorala, A. W. V. (2018). Factors affecting use of social media by university students: A study at Wuhan university of China. *Journal of the University Librarians Association of Sri Lanka*, *21*(2), 44-72.

Belanger, C. H., Bali, S., & Longden, B. (2014). How Canadian universities use social media to brand themselves. *Tertiary Education and Management*, *20*, 14-29.

Barabadi, S. A., Shams, A., & Wise, N. (2022). Social network sites impact on learning: Extending the TAM3 Model to Assess Academic Performance in Higher Education. *Journal of Agricultural Science and Technology*, 1073-1087.

Bhattarai, S., & Maharjan, S. (2020). Determining the factors affecting on digital learning adoption among the students in Kathmandu Valley: An application of technology acceptance model (TAM). *International Journal of Engineering and Management Research*, *10*.

Bhatti, Z. A., Arain, G. A., Yasin, H. M., Khan, M. A., & Akram, M. S. (2020). The role of integrated offline/online social activity and social identification in Facebook citizenship behavior formation. *Information Technology & People*, *34*(5), 1419-1438.

Boruzie, P. K., Kolog, E. A., Afful-Dazie, E., & Egala, S. B. (2022). Social network for collaborative learning: what are the determining factors?. *Universal Access in the Information Society*, 1-15.

Cetinkaya, L. (2017). The impact of WhatsApp use on success in education process. *International Review of Research in Open and Distributed Learning*, *18*(7).

Chau, P. Y., & Hu, P. J. H. (2001). Information technology acceptance by individual professionals: A model comparison approach. *Decision sciences*, *32*(4), 699-719.

Choi, G., & Chung, H. (2013). Applying the technology acceptance model to social networking sites (SNS): Impact of subjective norm and social capital on the acceptance of SNS. *International Journal of Human-Computer Interaction*, *29*(10), 619-628.

Dhume, P., & Dirsant, P. (2020). Social media usage and the factors influencing academic use- An exploratory study of higher education institution's students.

Fasae, J. K., & Adegbilero-Iwari, I. (2016). Use of social media by science students in public universities in Southwest Nigeria. *The Electronic Library*, *34* (2), 213-222.

Humida, T., & Al Manum, M. H., (2021) Factors Influencing Usage of Social Media Students for Academic Purposes Begum Rokeya University, Rangpur, Bangladesh. *International Journal of Research and Innovation in Social Science, 4(*5), 377-384.

Ismail, A., Hamzah, M. R., Hussin, H., Affandy, H. B., & Ahmad, Y. (2023, April). Adoption of TPB and TAM in investigating online self-disclosure among youth. In *AIP Conference Proceedings* (Vol. 2544, No. 1). AIP Publishing.

Jabeen, M., Qinjian, Y., Imran, M., Jabeen, M., & Rafiq, M. (2020). Contextual variables explaining the influence of social networking sites for information communication among library users: Cross-cultural study between China and Pakistan using Structure Equation Modeling. *Journal of Librarianship and Information Science, 52*(2), 562-576.

Jabeen, M. (2024). The adoption footprints of Koha as a library management system in university libraries of Pakistan. *Journal of Information Science*, 01655515231214980.

Jan, M. T., Abdullah, K., & Momen, A. (2015). Factors influencing the adoption of social networking sites: Malaysian Muslim users perspective. *Journal of Economics, Business and Management*, *3*(2), 267-270.

Karim, S., He, H., Mallah, G. A., Laghari, A. A., Madiha, H., & Larik, R. S. A. (2019). The impact of using Facebook on the academic performance of university students. In *Artificial Intelligence and Security: 5th International Conference, ICAIS 2019, New York, NY, USA, July 26–28, 2019, Proceedings, Part III 5* (pp. 405-418). Springer International Publishing.

Khan, S., Umer, R., Umer, S., & Naqvi, S. (2021). Antecedents of trust in using social media for E-government services: An empirical study in Pakistan. *Technology in Society*, *64*, 101400.

Kokab, S., Arif, M., & Qaisar, N. (2023). Factors affecting the university librarians' use of social media technologies in Pakistan: A structural equation modelling approach. *The Journal of Academic Librarianship*, *49*(3), 102719.

Lau, R. Y. (2012). An empirical study of online social networking for enhancing university students' learning. *International Journal of e-Education, e-Business, e-Management and e-Learning*, *2*(5), 425.

Li, L., Liu, X., Chen, Z., Wang, L., Lian, X., & Zou, H. (2021). The Application of a Case-Based Social Media–Assisted Teaching Method in Cariology Education: Comparative Study. *Journal of Medical Internet Research*, *23*(8), e29372.

Liu, C. C., & Liang, J. C. (2016). Blended learning in higher education: Current and future challenges in China. *Journal of Educational Technology Development and Exchange*, *9*(1), 1-14.

Liu, L., Zhang, L., Ye, P., & Liu, Q. (2018). Influencing Factors of University Students' Use of Social Network Sites: An Empirical Analysis in China. *International Journal of Emerging Technologies in Learning*, *13*(3), 71-86.

Masrom, M. B., Busalim, A. H., Abuhassna, H., & Mahmood, N. H. N. (2021). Understanding students' behavior in online social networks: a systematic literature review. *International Journal of Educational Technology in Higher Education*, *18*(1), 1-27.

McGloin, A. F., & Eslami, S. (2015). Digital and social media opportunities for dietary behavior change. *Proceedings of the Nutrition Society*, *74*(2), 139-148.

Niu, L. (2019). Using Facebook for academic purposes: Current literature and directions for future research. *Journal of Educational Computing Research*, *56*(8), 1384-1406.

Ngonidzashe, Z. (2013). Challenges and perceptions towards use of social media in higher education in Zimbabwe: A learners' perspective. *International Journal of Scientific & Engineering Research*, *4*(5), 242-249.

Peruta, A., & Shields, A. B. (2017). Social media in higher education: Understanding how colleges and universities use Facebook. *Journal of Marketing for Higher Education*, *27*(1), 131-143.

Raosoft. (n.d). Retrieved from https://www.raosoft.com/samplesize.html

Raza, S. A., Qazi, W., Umer, B., & Khan, K. A. (2020). Influence of social networking sites on life satisfaction among university students: a mediating role of social benefit and social overload. *Health Education*, *120*(2), 141-164.

Sabir, R. I., Ahmad, W., & Noor, N. (2013). Adoption of social networking sites among Pakistani university students: A case of face-book. *Journal of Asian Business Strategy*, *3*(6), 125-139.

So, H. J., & Kim, B. (2009). Learning about problem based learning: Student teachers integrating technology, pedagogy and content knowledge. *Australasian Journal of educational technology*, *25*(1).

Suárez-Lantarón, B., Deocano-Ruíz, Y., García-Perales, N., & Castillo-Reche, I. S. (2022). The educational use of WhatsApp. *Sustainability*, *14*(17), 10510.

Tareen, S. A., & Jabeen, M. (2019). The impacts of ICT/Social Media on the Students' Academic Performance: A Survey on Higher Educational Institutions of Balochistan. *Pakistan Library & Information Science Journal*, *50*(4).

Thong, J. Y., Hong, S. J., & Tam, K. Y. (2006). The effects of post-adoption beliefs on the expectation-confirmation model for information technology continuance. *International Journal of human-computer studies*, *64*(9), 799-810.

Unal, E., & Uzun, A. M. (2021). Understanding university students' behavioral intention to use Edmodo through the lens of an extended technology acceptance model. *British Journal of Educational Technology*, *52*(2), 619-637.

Venkatesh,V., & Bala, H. (2008). Technology acceptance model 3 and a research agenda on interventions. *Decision Sciences*, *39*(2), 273-315.X

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478.

Waqas, A., Afzal, M., Zaman, F., & Sabir, M. (2016). The impact of social networking sites' usage on the academic performance of university students of Lahore, Pakistan. *International Journal of Social Sciences and Management*, *3*(4), 267-276.

Appendix

Appendix A Instrument based Questions Used in Research

Table 5.: Instrument based Questions Used in Research

Factors	Measurement Item and Survey Questions	Literature Used
PU	**PU1**: Using social networking sites improves my performance in my job. **PU2**: Using social networking sites in my job increases my productivity. **PU3**: Using social networking sites enhances my effectiveness in my job. **PU4:** I find social networking sites to be useful in my job.	Sabir et al. (2013)
PEOU	**PEOU1:** My interaction with social networking sites is clear and understandable. **PEOU2:** Interacting with social networking sites does not require a lot of my mental effort. **PEOU3:** I find social networking sites to be easy to use.	Barabadi et al., (2022)

	PEOU4: I find it easy to get social networking sites to do what I want it to do.	
SN	**SN1:** People who influence my behavior think that I should use social networking sites.	Venkatesh, and Bala, (2008)
	SN2: People who are important to me think that I should use social networking sites.	
	SN3: The senior management of this business has been helpful in the use of social networking sites.	
	SN4: In general, the organization has supported the use of social networking sites.	
IMG	**IMG1:** 1 People in my organization who use social networking sites have more prestige than those who do not.	Choi, and Chung, (2013)
	IMG2: People in my organization who use social networking sites have a high profile.	
	IMG3: Having social networking sites is a status symbol in my organization.	
	IMG4: Having social networking sites increase chances of getting a promotion.	
REL	**REL1:** In my job (study), usage of social networking sites is important.	Barabadi et al., (2022)
	REL2: In my job (study), usage of social networking sites is relevant.	
	REL3: The use of social networking sites is pertinent to my various job (study)-related tasks.	
	REL4: The use of SNS is helpful in my job (study).	
OQ	**OQ1:** The quality of the output I get from social networking sites is high.	Barabadi et al., (2022)
	OQ2: I have no problem with the quality of social networking sites' output.	
	OQ3: I rate the results from social networking sites to be excellent.	
	OQ4: I am able to manage SNS for completing any task.	
RD	**RD1:** I have no difficulty telling others about the results of using social networking sites.	Bhattarai1 and Maharjan (2020)
	RD2: I believe I could communicate to others the consequences of using social networking sites.	
	RD3: The results of using social networking sites are apparent to me.	
	RD4: I would have difficulty explaining why using social networking sites may or may not be beneficial.	
CSE	**CSE1:** If there was no one around to tell me what to do as I go.	Venkatesh, and Bala, (2008)

	CSE2: If I had just the built-in help facility for assistance. **CSE3:** If someone showed me how to do it first. **CSE4:** If I had used similar packages before this one to do the same job.	
PEC	**PEC1:** I have control over using social networking sites. **PEC2:** I have the resources necessary to use social networking sites. **PEC3:** Given the resources, opportunities and knowledge it takes to use social networking sites, it would be easy for me to use social networking sites. **PEC4:** Social networking sites is not compatible with other systems I use.	Humida1, and Al Mamun (2021)
CPLY	**CPLY1:** Use of computer is spontaneous **CPLY2:** Use of computer is creative **CPLY3:** Use of computer is Playful **CPLY4:** Use of computer is Unoriginal	Bhattarai and Maharjan (2020)
CANX	**CANX1:** Computers do not scare me at all. **CANX2:** Working with a computer makes me nervous. **CANX3:** Computers make me feel uncomfortable. **CANX4:** Computers make me feel uneasy.	Humida, and Al Mamun (2021)
PENJ	**PENJ1:** I find using social networking sites to be enjoyable. **PENJ2:** The actual process of using social networking sites is pleasant. **PENJ3:** I have fun using social networking sites. **PENJ4:** Use of SNS is very attractive.	Bhattarai and Maharjan (2020)
OU	**OU1:** Task: Open any social networking sites on your mobile, time how long it takes for you to create a news/announcement item with the title "Test Announcement" and the text "Technology is fun!" **OU2:** How long can you use any SNS skillfully **OU3:** I think it is easy to attain skills about how to use SNS. **OU4:** All SNS services are easy to understand.	Venkatesh, and Bala, (2008)
BI	**BI1:** Assuming I had access to social networking sites, I intend to use it. **BI2:** Given that I had access to social networking sites, I predict that I would use it. **BI3:** I plan to use social networking sites in the next months. **BI4:** I prefer to use SNS every time.	Jabeen (2024)

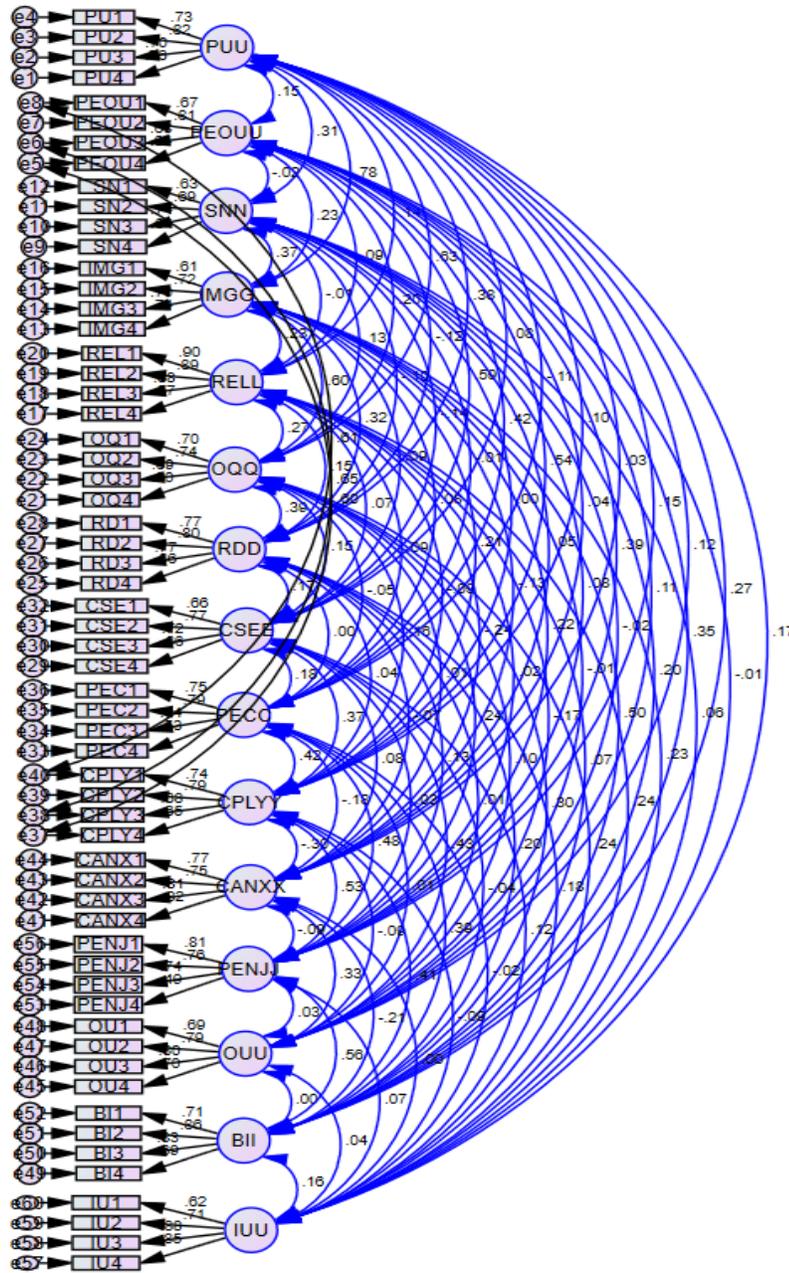| IU | **IU1:** I would like the idea of using online SNS for my learning or research.
IU2: I intend to continue using SNS in future rather than discontinue their use.
IU3: I intend to continue using SNS over any alternative means.
IU4: I plan to use SNS to fulfill my educational requirements | Jabeen et al. (2020) |

Appendix B Model Fit Analysis

Fig 1(Appendix): Model fit analysis