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ENHANCING LEARNING EXPERIENCE: ENGINEERING STUDENTS' VIEWS ON GOOGLE CLASSROOM AND ACADEMIC ACHIEVEMENT

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ABSTRACT

Aim/Purpose	This study aims to explore factors influencing engineering students' acceptance of the Google Classroom platform in communication skills courses to ensure more active engagement and better performance.
Background	In response to the underutilization and hesitancy in adopting educational technologies, this study investigates the factors influencing engineering students' acceptance of Google Classroom in a Middle Eastern university. Despite the potential benefits of such technologies, their integration faces challenges due to cultural factors and resistance from educators and students alike.
Methodology	The study utilized a Technology Acceptance Model-based questionnaire distributed via Google Forms to 140 engineering students to analyze the acceptance of Google Classroom. Data analysis was conducted using structural equation modeling with Smart PLS, focusing on critical constructs like ease of use and perceived usefulness. Limitations due to the sample size and single-institution scope are acknowledged, which may affect the generalizability of the findings.
Contribution	This study outlines practical steps for educators to enhance learning by fostering a user-friendly environment and supporting student proficiency with technology. It highlights the importance of policies encouraging educational technology adoption and urges developers to focus on user-centered features. Additionally, the study calls for collaboration among educators, policymakers, and developers to create engaging and compelling learning experiences.
Findings	Findings unveil the significant impact of user satisfaction on perceived ease of use and usefulness, subsequently influencing attitudes. Furthermore, the study

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	identifies the substantial influence of subjective norms and attitudes on intentions and the consequential impact of intentions on self-perception of academic success.
Recommendations for Practitioners	The study advocates for educators to cultivate a motivating environment that fosters active engagement with the Google Classroom platform by raising students' satisfaction and positive attitudes.
Recommendations for Researchers	The study encourages further investigation into the long-term effects of technology integration on students' academic performance and learning outcomes and exploration of additional variables or moderators that may influence technology acceptance in educational settings.
Impact on Society	By understanding the factors influencing engineering students' acceptance of Google Classroom, educators can better integrate technology into communication skills courses, potentially improving student engagement and academic performance and preparing students for success in a technologically driven society.
Future Research	Longitudinal studies tracking students' technology adoption patterns over time would also contribute to understanding the sustained impact of technology integration on educational practices and outcomes.
Keywords	TAM, Google Classroom, communication skills, academic success

INTRODUCTION

Over the past few years, digital learning tools and technology have provided prompt learning experiences, swift assessments, and enhanced engagement that conventional classrooms still need to provide (Haleem et al., 2022). The positive consequences of implementing such technologies surpass those of traditional learning approaches, indicating a significant potential for schools and educational institutions to integrate technology into the classroom. Despite the availability of numerous technological tools for classroom use, research indicates they need to be utilized more and employed to their full potential. Ruthven (2009) provides evidence of this underutilization, noting a significant gap between the potential of digital tools and their actual use in educational practices. Additionally, there is considerable hesitancy among instructors to implement technology in education, with Vakaliuk et al. (2021) identifying concerns over digital distractions as a primary barrier. This hesitancy is particularly concerning as educational institutions make substantial investments in technology. However, many of these tools still need to be noticed due to educators' lack of enthusiasm or understanding (Liu et al., 2009).

The necessity of implementing technological tools and platforms to enhance the classroom environment and create a more engaging teaching-learning experience is supported by Dudar et al. (2021) and Kosaretsky et al. (2021). They emphasize that digital tools offer increased flexibility and enable the curriculum to be tailored to meet the specific needs of individual students. However, despite the clear advantages of adopting digital technology tools in education, the challenge of their practical implementation remains a persistent hurdle, signaling a gap in understanding the specific factors that influence the adoption and effective use of platforms like Google Classroom, particularly among engineering students in Middle Eastern contexts.

Within the broader discourse on technology integration in education, the Technology Acceptance Model (TAM), developed by Davis (1989), stands out as a widely adopted framework to analyze user perceptions. This study focuses on engineering students, a demographic characterized by strong analytical skills, problem-solving abilities, and technical aptitude, to uncover insights that are particularly relevant to this group. Engineering students, often early adopters of technology, can provide valuable

feedback on the usability and effectiveness of educational technology platforms like Google Classroom.

Considering the challenges, Google Classroom emerges as a vital tool in this study. With features that enhance communication and organization while reducing paper use, it proves to be an excellent fit for addressing the typical hesitance and underuse of digital tools in education. As a full-featured learning management system, Google Classroom makes it easy to set up, share, and grade assignments, which helps students become more involved, whether they are learning online or remotely. According to Main (2022), Google Classroom was created to make sharing information and assignments between teachers and students smoother, helping schools move away from paper and embrace digital learning.

This research extends the findings of Liu et al. (2009) and Bruce (2020), aiming to explore further the adoption of technology within education. The study addresses the gaps identified in these prior analyses by employing TAM and integrating constructs from the Information System Continuance Theory. Specifically, it examines Google Classroom's adoption among engineering students, seeking to offer educators and stakeholders better insights into influencing students' acceptance and evaluating the platform's impact on academic performance.

The primary objective of this study is to elucidate the factors influencing engineering students' adoption of Google Classroom and assess its perceived impact on their academic performance. This endeavor aims to enhance the effective implementation of Google Classroom in education, potentially leading to more excellent educational benefits by employing the IS success model proposed by DeLone and McLean (2003) as a framework. The findings are expected to contribute valuable insights into the effective integration of digital tools in educational settings, thereby addressing the identified research gap and building on the foundation of previous studies.

LITERATURE REVIEW

The Technology Acceptance Model (TAM) was introduced by Davis (1989) to explain how individuals adopt and use computer technology. TAM posits that external factors influence intentions to use technology through perceived ease of use (PEU) and perceived usefulness (PU), predicting actual usage behavior. Originating from the Theory of Reasoned Action (TRA) in social psychology by Fishbein and Ajzen (1975), TRA forecasts an individual's intentions to engage in specific behaviors, suggesting that positive attitudes toward behavior (influenced by PU and PEU) and the perception of social pressure (subjective norm) lead to higher motivation to engage in the behavior. This framework provides a foundation for understanding the determinants of technology acceptance, emphasizing the importance of attitudinal factors.

Building on these theories, Mimiaga et al. (2009) illustrate the application of TRA, demonstrating how attitudes and subjective norms shape intentions across different contexts. TAM refines this approach by focusing on technology use and delineating PEU and PU as the primary attitudinal factors driving technology adoption. Saadé et al. (2007) explore these aspects within information technology, emphasizing how end-user perceptions significantly influence their interaction with technology.

Empirical research supports TAM's core assertions. Studies by Rasimah et al. (2011) and Sumak et al. (2011) have documented the impacts of PU and PEU on attitudes and intentions regarding technology use, affirming TAM's validity. Davis (1989) defines PU as the belief that employing a specific system will enhance job performance, a view supported by subsequent research. Subramanian (1994) found a strong correlation between PU and usage behavior, a finding echoed by Fu et al. (2006) and Norazah et al. (2008), who noted that behavioral intention is significantly driven by perceived usefulness.

PEU, described by Davis (1989) as the degree of effortlessness associated with system use, further influences technology acceptance, corroborated by Moon and Kim (2001), Fagan et al. (2008), and

Hsu et al. (2009). These studies underscore the foundational role of PEU in fostering user engagement with IT.

While the original TAM model has been adopted widely, subsequent research has sought to enhance its explanatory power by integrating additional factors. Efforts to extend TAM have involved introducing new constructs such as individual, psychological, social, and cognitive factors to provide a more comprehensive understanding of technology use across various fields. Studies like Burhan-Horasanlı (2022), Luo et al. (2021), Y. Wang et al. (2022), and Zogheib and Daniela (2022) have carried forward this research tradition, which applies TAM to diverse contexts, including education. Following this current trend, this study integrates new factors into the original TAM model to explore the multifaceted influences on technology acceptance among engineering students in communication skills courses.

THEORETICAL FRAMEWORK

TECHNOLOGY ACCEPTANCE MODEL (TAM) WITH EXTERNAL VARIABLES

In this paper, the conventional concepts within the Technology Acceptance Model (TAM) as developed by Davis (1989) were adapted and defined as follows: Perceived Usefulness (PU) assesses the extent to which users perceive that Google Classroom could enhance their academic performance in communication skills classrooms, Perceived Ease of Use (PE) denotes the extent to which users believe that using Google Classroom in communication skills classrooms does not demand excessive effort, Attitude (ATT) indicates the extent to which users express interest in Google Classroom as a learning/teaching platform, and Intention to Use (BI) signifies users' behavioral intentions to use Google Classroom for academic purposes. As such, the study aims to test the following four hypotheses based on the original model:

- **H1:** Perceived usefulness significantly impacts the attitude towards using Google Classroom.
- **H2:** Perceived ease of use significantly influences students' attitudes toward using Google Classroom.
- **H3:** Perceived ease of use significantly impacts the perceived usefulness of Google Classroom.
- **H4:** Attitude significantly affects students' behavioral intention to use Google Classroom.

This study aims to provide a more robust model that can explain university students' perceptions of using Google Classroom in communication skills courses. Four additional constructs related to educational fields were added to the original model: self-efficacy, user satisfaction, subjective norm, and academic performance.

Bandura (1986) defines self-efficacy as an individual's confidence in their ability to perform a specific task or behavior. Venkatesh and Davis (2000) revealed that self-efficacy determines perceived ease of use before and after a hands-on experience with a system. Crucially shaping an individual's emotions and actions (Compeau & Higgins, 1995), self-efficacy has been identified as a significant predictor of perceived usefulness and ease of use in numerous studies, such as those by Hsu et al. (2009) and Macharia and Pelser (2014).

Moreover, research has revealed that self-efficacy significantly influences attitudes (Eastin, 2002) and leads to more favorable behavioral intention through its impact on perceived usefulness and perceived ease of use (Pikkarainen et al., 2004; Y.-S. Wang et al., 2003). As such, this study proposes the following hypotheses:

- **H5:** Self-efficacy significantly affects the perceived ease of using Google Classroom.
- **H6:** Self-efficacy significantly affects the perceived usefulness of using Google Classroom.

H7: Self-efficacy significantly affects the attitude towards using Google Classroom.

The second added construct, subjective norm, is categorized as one of the social influence variables that pertains to the perceived societal pressure to engage in or abstain from specific behaviors (Ajzen, 1991). Subjective norm is defined as an individual's perception that those who hold significance for them believe they should or should not undertake a particular behavior (Nickerson, 2023). Drawing from the Theory of Planned Behavior (Ajzen, 1991) and the Unified Theory of Acceptance and Use of Technology (Venkatesh et al., 2003), subjective norm, or social influence, is hypothesized to directly impact behavioral intention and perceived usefulness. This view is supported by Schepers and Wetzels (2007), who conducted a meta-analysis of 88 studies on the relationship between subjective norm and TAM variables, revealing overwhelming evidence of a significant correlation between subjective norm and perceived usefulness, as well as subjective norm and intention to use. As such, this study puts forth the following hypotheses:

H8: Subjective norm significantly affects the perceived ease of use of Google Classroom.

H9: Subjective norm significantly affects the perceived usefulness of using Google Classroom.

H10: Subjective norm significantly affects intention towards using Google Classroom.

Satisfaction is a crucial measure of the quality of learning experiences (Yukselturk & Yildirim, 2008). Satisfaction is essential to explore students' satisfaction with different technologies used in teaching since new technologies have changed how students interact with teachers and classmates (Kaminski et al., 2009). In a specific context, satisfaction refers to how students feel about various factors affecting that situation (Wixom & Todd, 2005). The authors agree that satisfaction reflects favorability toward the system/tool and its interaction mechanics. In other words, greater satisfaction with the system correlates with a higher likelihood of finding it easy to use. The authors emphasize the influential role of object-based attitudes on behavioral beliefs, exemplified by the robust and significant relationships between satisfaction and usefulness and between satisfaction and ease of use. Thus, this study proposes the following hypotheses:

H11: Student satisfaction significantly affects perceived ease of use.

H12: Student satisfaction significantly influences perceived usefulness.

Following the concepts introduced by Ajzen and Fishbein (1980), behavioral intention refers to a user's inclination to persist in a specific behavior, particularly in the technological context, indicating the willingness to use a specific technology that directly influences actual usage. Recent studies have identified a positive correlation between technology use, mobile phones, and students' academic performance (Alalwan et al., 2019; Al-Rahmi et al., 2018; Hossain et al., 2019). Academic performance, defined as the outcome of an educational course where learners achieve their educational objectives (MacGeorge et al., 2008), forms the basis for the following hypothesis:

H13: Behavioral intention significantly affects how students perceive the effect of using Google Classroom on their academic performance.

Figure 1 below illustrates the research model to be examined in this study. In this model, the latent variables of self-efficacy, subjective norm, and user satisfaction directly influence the latent variables of perceived ease of use and perceived usefulness, which are considered endogenous variables. Additionally, perceived ease of use and usefulness are treated as exogenous variables, as they impact the endogenous variables of attitude and behavioral intention. Academic satisfaction performance is considered an endogenous variable because it is directly affected by behavioral intention. The arrows between a latent variable and its corresponding indicators represent measurement validity.

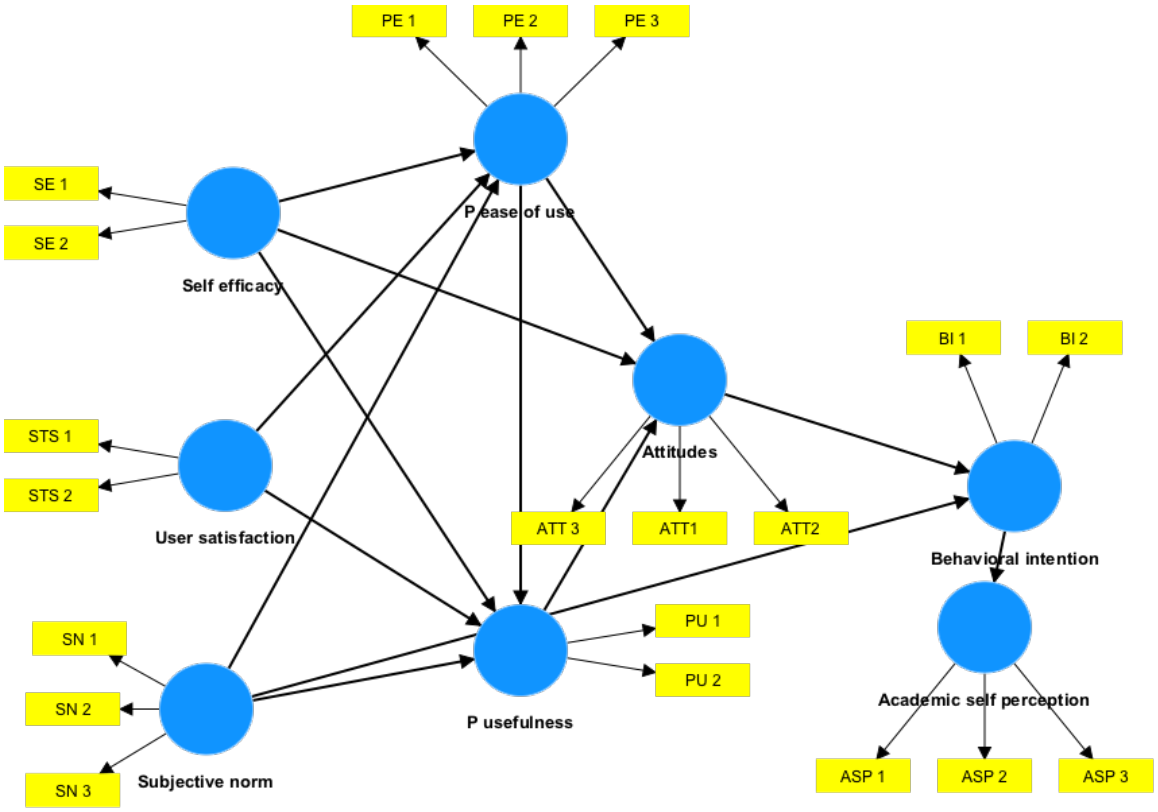

Figure 1. The proposed model

METHODOLOGY

SUBJECTS

The study focused on university students enrolled in the Faculty of Engineering at a Middle Eastern university. Students were required to take a communication skills course in their first year of enrollment as part of the general course requirements that all engineering students must complete. Alther (n.d.) stated that enrolling in communication skills courses has many benefits, from increasing self-awareness and dealing with challenging behavior to enhancing morale, building trust, and offering a clear sense of direction. Communication skills were so crucial that students could not drop the course anytime during the semester. Passing the communication skills course is essential for students to have the opportunity to graduate from the Faculty of Engineering. The sample included 140 male students from 10 different sections that five different teachers taught. All teachers used Google Classroom as the leading platform for instruction, and all assignments were done and marked through Google Classroom. These courses enhanced students' communication skills by integrating verbal, written, and technical proficiencies across diverse scenarios. Beyond oral communication, the course emphasized refining reading, writing, presentation, and technical communication capabilities. The course structure involved five sessions per week, each comprising two 100-minute lectures, totaling 50 minutes per lecture. All instructors had at least ten years of experience teaching this communication skills course at the university, having developed all course materials, including textbooks, activities, tests, and grading rubrics. The participants were required to answer a 21-item survey developed via Google Forms. The 40 students who chose not to participate in the study were either busy on the day the survey was administered or had no interest in participating as it was towards the end of the semester. They were busy preparing for their final exams.

INSTRUMENT

This study employs an instrument based on the Technology Acceptance Model (TAM) developed by Davis (1989). As used by Park (2009), TAM consists of seven constructs: self-efficacy, subjective norm, system accessibility, perceived usefulness, perceived ease of use, attitude, and intention to use.

Each construct was measured by items validated by existing literature and tailored to the context of Google Classroom use in communication skills courses. The construct of system accessibility was excluded from the survey instrument as all enrolled students inherently have access to Google Classroom. This access is facilitated by the university's infrastructure, including equipping classrooms with internet-connected desktops and requiring students to bring their laptops for educational purposes. The universal use of Google Classroom in communication skills courses at the university further substantiates this accessibility. Consequently, since the platform's access does not vary among the student population, it was not considered a variable affecting the acceptance and use of Google Classroom in this study. Thus, to maintain the study's relevance and specificity to the psychological and behavioral constructs under TAM, system accessibility was deemed outside the scope of the investigation's core objectives.

The addition of the user satisfaction construct, informed by Wixom and Todd (2005), and academic self-perception, derived from Bhattacherjee (2001), aimed to capture the facets of user experience and psychological engagement that are pivotal in educational settings. The 21 items, as detailed in Table 1, utilized a seven-point Likert scale ranging from 'strongly disagree' to 'strongly agree' to measure the intensity of students' attitudes and perceptions.

The survey was administered through Google Forms at the end of the semester to ensure students had extensive exposure to Google Classroom. The survey timing was chosen to minimize interference with final exam preparations and ensure that students' responses reflected an entire semester's experience with the platform. Of the total population, 40 students opted not to participate due to end-of-semester commitments or lack of interest, underscoring the voluntary nature of the study.

Ethical standards were observed meticulously throughout the study. Before participation, students were provided with a clear understanding of the research objectives, their rights as participants, and the confidential nature of their responses. Informed consent was obtained from all respondents, and anonymity was maintained strictly in the handling and reporting of survey data.

Finally, the sample was limited to male students from one university, and the voluntary participation might introduce a selection bias. Although planned strategically, the timing of data collection might also limit the generalizability of the findings, as it coincides with a potentially stressful period for students. This study employs an instrument based on the Technology Acceptance Model (TAM) developed by Davis (1989). As used by Park (2009), TAM consists of seven constructs: self-efficacy, subjective norm, system accessibility, perceived usefulness, perceived ease of use, attitude, and intention to use.

Table 1. The survey depicting the eight constructs used in this study

The Eight Constructs
Academic self-perception
1. I am confident in my scholastic abilities.
2. I do well in college.
3. I learn new concepts quickly.
4. I am confident in my ability to succeed in college.

The Eight Constructs
User satisfaction
5. All things considered, I am very satisfied with Google Classroom.
6. Overall, my interaction with Google Classroom is very satisfying.
Subjective norm
7. What Google Classroom stands for is important to me as a university student.
8. I like using Google Classroom for the similarity of my values underlying its use.
9. In order to prepare me for a future job, it is necessary to take Google Classroom courses.
Self-efficacy
10. I feel confident finding information in Google Classroom.
11. I have the necessary skills for using Google Classroom.
Behavioral intention
12. I intend to check announcements from Google Classroom frequently.
13. I intend to be a heavy user of Google Classroom.
Attitudes
14. Studying through Google Classroom was a good idea.
15. Studying through Google Classroom was a wise idea.
16.I am positive toward Google Classroom.
Perceived usefulness
17. Google Classroom would improve my learning performance.
18. Google Classroom could make it easier to study course content.
Perceive ease of use
19. I find Google Classroom easy to use.
20. Learning how to use Google Classroom is easy for me.
21. It is easy to become skillful at using Google Classroom.

RESULTS

Employing Smart-PLS 4.0.9.9 for structural equation modeling (SEM) was a strategic choice, motivated by its flexibility in handling complex models and non-normal data distributions – a strength highlighted by Cassel et al. (1999). This software is appropriate for the study, considering the sample size meets the guideline, which suggests it should be at least ten times the size of the largest block of indicators in the model.

First, to assess the measurement model's integrity, the evaluation focused on composite reliability, convergent validity, and discriminant validity, aligning with the standards of Barclay et al. (1995). Interestingly, the composite reliability values for all constructs, as revealed in Table 2, ranged from 0.82 to 0.90. These figures, comfortably within the acceptable limits established by Nunnally and Bernstein (1994), indicate a need for more redundancy among the indicators, underscoring the measures' reliability.

Table 2. Composite reliability

	Composite reliability
Academic self-perception (ASP)	0.85
Attitudes (ATT)	0.86
Behavioral intention (BI)	0.82
Perceived ease of use (PE)	0.85
Perceived usefulness (PU)	0.86
Self-efficacy (SE)	0.87
Subjective Norm (SN)	0.90
User satisfaction (STS)	0.90

Furthermore, convergent validity was confirmed, as evidenced by the average variance extracted (AVE) values for each construct surpassing the 0.5 threshold (Table 3). This achievement signifies a strong correlation among the indicators within each construct and attests to the effectiveness of the measures used.

Table 3. Average variance extracted

	AVE
Academic self-perception (ASP)	0.78
Attitudes (ATT)	0.82
Behavioral intention (BI)	0.83
Perceived ease of use (PE)	0.81
Perceived usefulness (PU)	0.85
Self-efficacy (SE)	0.89
Subjective Norm (SN)	0.88
User satisfaction (STS)	0.90

Similarly, the study's approach to discriminant validity, employing the Fornell-Larcker criterion (Fornell & Larcker, 1981), ensured that each construct was measured distinctly. As shown in Table 4, the square root of the AVE for each construct exceeded its correlations with other constructs, affirming the distinctiveness of the measures.

Table 4. Latent variables correlations

	ASP	ATT	BI	PE	PU	SE	SN	STS
ASP	1	0.162	0.483	0.206	0.187	0.342	0.324	0.307
ATT		1	0.411	0.386	0.589	0.141	0.256	0.318
BI			1	0.254	0.474	0.446	0.383	0.301
PE				1	0.331	0.334	0.313	0.401
PU					1	0.257	0.415	0.358
SE						1	0.332	0.361
SN							1	0.148
STS								1

Transitioning to hypothesis testing, the results summarized in Table 5 offer intriguing insights into the relationships explored in this model. Notably, perceived usefulness (PU) had a significant impact on attitudes (ATT) towards Google Classroom ($\beta = 0.589$, $p < .001$), highlighting the critical role perceived utility plays in shaping students' attitudes. Moreover, the findings illustrate that behavioral intention (BI) to use Google Classroom is significantly influenced by attitudes (ATT) ($\beta = 0.411$, $p < 0.001$), suggesting that positive attitudes predict a higher intention to use the platform.

Additionally, the analysis revealed that subjective norm (SN) significantly influences perceived usefulness (PU) ($\beta = 0.415$, $p < 0.001$), indicating the importance of social influences on perceptions of Google Classroom's utility. Equally important, the study uncovered significant effects of user satisfaction on perceived ease of use (PE) ($\beta = 0.401$, $p < 0.001$) and the influence of subjective norms on behavioral intention (BI) ($\beta = 0.383$, $p < 0.001$), among other relationships. These findings collectively paint a comprehensive picture of the factors influencing students' acceptance and utilization of Google Classroom.

Table 5. Hypothesis testing results

	Model's coefficients β	**T statistics**	**P value**
H1: PU -> ATT	0.589	7.850	0.000
H2: PE -> ATT	0.386	4.751	0.030
H3: PE -> PU	0.331	12.608	0.020
H4: ATT -> BI	0.411	2.955	0.002
H5: SE -> PE	0.334	2.149	0.032
H6: SE -> PU	0.257	3.264	0.001
H7: SE -> ATT	0.141	4.344	0.000
H8: SN -> PE	0.313	3.865	0.020
H9: SN -> PU	0.415	6.750	0.000
H10: SN -> BI	0.383	4.683	0.003
H11: STS -> PE	0.401	2.573	0.000
H12: STS -> PU	0.358	4.975	0.000
H13: BI -> ASP	0.483	5.537	0.000

In analyzing the data, pivotal relationships have been uncovered that shed light on the factors influencing engineering students' preference for Google Classroom. Figure 2 synthesizes these findings, illustrating the path coefficients that articulate the relationships' strengths and statistical significances. Perceived usefulness emerges as a factor influencing student attitudes toward the platform profoundly. These relationships highlight the complexity of factors that drive students' acceptance of educational technology and shape their perceptions of academic success. The visual representation in Figure 2 summarizes these critical relationships succinctly, with the β coefficients and p-values providing empirical weight to the insights gained.

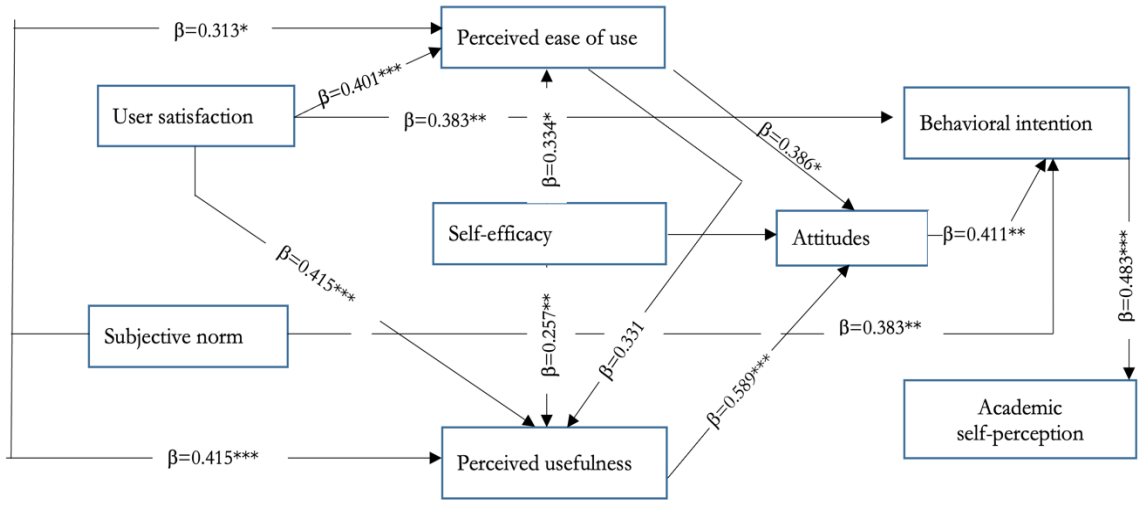

Figure 2. Significant path coefficients

DISCUSSION

This research significantly enhances the understanding of the Technology Acceptance Model (TAM) in educational settings, particularly emphasizing the Middle Eastern educational landscape. Findings from this study underscore the efficacy of TAM as a valuable theoretical framework for understanding students' perceptions of technology use in educational environments. By applying this model to evaluate students' acceptance of Google Classroom as a primary educational platform in communication skills courses and by incorporating external factors such as user satisfaction, subjective norm, self-efficacy, perceived ease of use, and perceived usefulness, this study offers comprehensive insights into the dynamics that shape students' behavioral intentions towards using Google Classroom.

Furthermore, the findings underscore the profound impact of perceived usefulness on fostering positive attitudes toward technology use. This aspect resonates with the seminal work of Davis (1989), who first articulated the significance of this relationship within the TAM framework. Similarly, the critical importance of user satisfaction in enhancing perceived ease of use echoes the findings of Wixom and Todd (2005). This observation suggests a pressing need for educational stakeholders to prioritize user-focused design and support in e-learning platforms.

Additionally, in the Middle Eastern context, the analysis reveals that collectivist cultural values significantly amplify the influence of subjective norms on technology acceptance. For instance, in educational settings where community and family opinions are highly valued, endorsing e-learning platforms by respected figures can increase their adoption dramatically. Therefore, this insight underscores the necessity of involving community leaders in introducing and promoting educational technologies. Such involvement ensures that their implementation aligns harmoniously with prevailing cultural values and expectations.

Moreover, translating these insights into practical strategies is crucial. Educational administrators should consider developing targeted training sessions that familiarize students with Google Classroom functionalities and contextualize its use within their cultural and educational frameworks. These initiatives could include workshops led by respected community and educational leaders who exemplify the successful integration of technology into their teaching practices, thereby fostering a more receptive environment for digital learning platforms.

However, while this study offers valuable insights, it is essential to acknowledge its limitations, mainly its focus on a male-only demographic from a single university. Future research should broaden the

investigation scope to include diverse student populations across various educational institutions in the Middle East and beyond. Doing so would enhance the findings' external validity and provide a richer understanding of the interplay between cultural factors and technology acceptance.

Thus, this study's application of TAM to Google Classroom within the Middle Eastern educational setting marks a significant contribution to the field, underscoring the importance of cultural considerations in technology acceptance research. Future studies could further explore the impact of other socio-cultural and psychological factors on technology adoption, employing longitudinal designs to capture the evolving nature of technology acceptance.

In summary, this study enhances the understanding of how technology is accepted in educational contexts. It reveals the complex interactions between students' attitudes, perceived usefulness, and social influences in shaping their adoption and use of online learning platforms. Highlighted is the importance of developing educational technologies that are both user-focused and culturally sensitive. The knowledge gained from this research provides a foundation for further exploration into how these elements function in various educational environments, supplying concrete methods for educators, school administrators, and policymakers to manage technology integration in education effectively.

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