Students' Perception of Google Classroom and Microsoft Teams Using TAM-Based Constructs

Titirut Rungkaew*

Abstract

Purpose: This study examined undergraduate students' perceptions of Google Classroom and Microsoft Teams using five constructs of the Technology Acceptance Model (TAM): Perceived Usefulness (PU), Perceived Ease of Use (PEU), Perceived Enjoyment (PE), Task-Technology Fit (TTF), and Perceived Resources (PR). A total of 300 students enrolled in a Thai university participated, with each course section using one of the two platforms for at least three weeks prior to data collection. **Research design, data and methodology:** A quantitative, cross-sectional survey design was employed. Data were analyzed using descriptive statistics, reliability analysis, and independent samples t-tests to compare perceptions between the platforms. **Results:** Students reported generally positive perceptions toward both LMSs, with all means falling within the "agree" range. Although Microsoft Teams showed slightly higher descriptive ratings, independent samples t-tests indicated no statistically significant differences across all constructs. Independent samples t-tests indicated no statistically significant differences between platforms across all five constructs ($p > .05$). **Conclusions:** The findings suggest that both platforms are perceived as similarly useful, intuitive, enjoyable, and adequately supported for academic tasks. Institutional decisions regarding LMS adoption may therefore rely on practical considerations such as integration, cost, or technical support rather than differences in student perception. The findings highlight that LMS adoption decisions in Thai university may not hinge on platform choice alone but on institutional support, instructional practices, and contextual readiness.

Keywords: Technology Acceptance Model, Google Classroom, Microsoft Teams, Learning Management Systems, Students' Perception

1. Introduction

Digital technologies have fundamentally reshaped higher education worldwide, driving institutions toward flexible, accessible, and technology-enhanced learning environments. Learning Management Systems (LMSs) have become core infrastructures for delivering content, facilitating communication, organizing assessments, and enabling both synchronous and asynchronous instruction (Dahlstrom et al., 2014; Dobre, 2015). As universities increasingly adopt blended and online modalities, the effectiveness of LMS platforms plays a central role in students' learning experiences, engagement, and academic success.

Among the many platforms available, Google Classroom and Microsoft Teams have emerged as two of the most widely used LMSs in higher education settings. Google Classroom, integrated within Google Workspace, prioritizes simplicity, accessibility, and mobile-friendly use (Iftakhar, 2016), making it appealing to learners with varying levels of digital literacy. Microsoft Teams, in contrast, was originally developed as a collaboration tool within Microsoft 365 but has since evolved into a full-featured educational platform offering integrated communication, video conferencing, file management, and assignment workflows (López et al., 2021). Both LMSs were heavily adopted during the COVID-19 pandemic, which accelerated the shift toward online and hybrid learning environments (Kurata et al., 2018; Ngeze, 2016).

Despite their popularity, the two platforms differ

_____
1 *Titirut Rungkaew, Language Institute, Thammasat University, Thailand.
Email: titirutr@gmail.com

significantly in interface structure, user experience, collaborative affordances, and ecosystem integration. These differences, which extend beyond technical specifications, hold pedagogical implications that can shape learner engagement, motivation, and task performance (Berking & Gallagher, 2016; Liaw et al., 2007; Wang, 2003). Prior studies show that platform usability, clarity of navigation, communication functions, and assessment tools can influence both learner satisfaction and technology acceptance (Eom, 2014; Shee & Wang, 2008). Yet, comparative research on LMS effectiveness often focuses on technical features or instructor perspectives, with comparatively fewer studies privileging students' perspectives, the group most directly affected by LMS design and implementation (Altunoğlu, 2017; Emelyanova & Voronina, 2014).

To understand user acceptance, the Technology Acceptance Model (TAM) remains one of the most influential theoretical frameworks in educational technology research. TAM posits that perceived usefulness (PU) and perceived ease of use (PEU) directly affect users' attitudes toward, and continued usage of, technological systems (Davis, 1989). Extensions of TAM have incorporated additional constructs—such as perceived enjoyment (Van der Heijden, 2004), task-technology fit (Goodhue & Thompson, 1995), and perceived resources (Park, 2009)—to better capture the multidimensional nature of technology interactions in academic settings. These constructs have been validated across diverse e-learning contexts, demonstrating strong predictive power in technology adoption among university students (Al-Rahmi et al., 2021; Park, 2009; Sun et al., 2008).

Given that Google Classroom and Microsoft Teams are increasingly used interchangeably across courses in Thailand, particularly in institutions where instructors choose platforms independently, students frequently gain exposure to both systems. This dual exposure creates a unique opportunity to compare their perceptions across TAM-based constructs in real academic settings. Understanding these perceptions is critical because a platform's effectiveness is shaped not only by technical features but also by how students interpret, evaluate, and experience those features in relation to their learning needs (Garrison et al., 1999; Garrison et al., 2010; Mwalumbwe & Mtebe, 2017). Moreover, as digital-native learners expect seamless, responsive, and engaging digital environments, institutions risk inefficiencies or reduced engagement if LMS adoption decisions are made without sufficient empirical insight.

The present study addresses this gap by conducting a comparative analysis of student perceptions of Google Classroom and Microsoft Teams using five TAM-based constructs: Perceived Usefulness, Perceived Ease of Use,

Perceived Enjoyment, Task-Technology Fit, and Perceived Resources. By focusing on the student voice within a Thai higher education context, this research contributes to a more nuanced understanding of LMS acceptance and provides evidence that can guide institutional decision-making, platform selection, and instructional design strategies. The findings aim to support educators and administrators in enhancing the quality of technology-mediated learning environments in universities transitioning toward more digitally integrated pedagogies.

In Thailand, LMS adoption is largely decentralized, with instructors and faculties independently selecting platforms based on accessibility, familiarity, and institutional support. This has resulted in parallel use of systems such as Google Classroom and Microsoft Teams within the same institution, creating a unique context for comparative investigation. Despite widespread adoption during the post-pandemic period, empirical evidence comparing student perceptions of these platforms in Thai higher education remains limited. This study addresses this gap by examining whether students perceive meaningful differences across TAM-based dimensions when exposed to different LMS environments.

2. Literature Review

2.1 Learning Management Systems in Higher Education

Learning management systems have become essential tools in higher education, supporting instructional delivery, communication, assessment, and collaboration. LMS platforms facilitate both synchronous and asynchronous learning, enabling instructors to distribute materials, monitor progress, and engage students beyond traditional classroom boundaries (Liaw et al., 2007; Shee & Wang, 2008). The increasing integration of LMS technology in universities is linked to pedagogical benefits such as improved access to course resources, enhanced feedback mechanisms, and greater flexibility in teaching and learning (Dobre, 2015; Eom, 2014).

Google Classroom and Microsoft Teams are widely used LMS platforms due to their integration with existing institutional ecosystems. Google Classroom emphasizes simplicity, mobility, and ease of navigation (Iftakhar, 2016), making it suitable for diverse learners, including those with limited technical proficiency. Microsoft Teams provides a more feature-rich environment through integrated communication tools, collaborative document editing, and built-in video conferencing (López et al., 2021). The rapid adoption of both platforms accelerated during the COVID-19 pandemic, which compelled universities to transition into

online and blended learning environments to ensure educational continuity (Kurata et al., 2018; Ngeze, 2016).

Despite differences in design philosophy, both systems aim to enhance teaching efficiency and student engagement. Studies indicate that LMS usability, interactivity, and adaptability significantly influence student satisfaction and learning outcomes (Berking & Gallagher, 2016; Wang, 2003). Therefore, examining student perceptions of these platforms is crucial for improving LMS implementation and digital pedagogy.

2.2 Technology Acceptance Model (TAM)

The Technology Acceptance Model (Davis, 1989) posits that two primary determinants, Perceived Usefulness (PU) and Perceived Ease of Use (PEU), influence a user's intention to adopt and use a system. PU reflects the degree to which a learner believes that a system enhances academic performance, while PEU refers to how effortless and intuitive the system is to use. TAM's simplicity and predictive strength have led to its widespread application in LMS research, where both constructs consistently predict student satisfaction, perceived learning, and system acceptance (Park, 2009; Sun et al., 2008).

Recognizing that online learning environments involve more than functional efficiency, later extensions of TAM incorporated additional constructs that capture enjoyment, contextual resources, and alignment between technology and academic tasks. These expanded constructs help explain deeper motivational and environmental factors that influence LMS adoption.

2.3 TAM-Based Constructs

2.3.1 Perceived Usefulness (PU)

Perceived Usefulness is central to TAM and reflects whether students believe that an LMS contributes positively to their learning tasks. In academic contexts, this includes organizing coursework, improving access to materials, enhancing communication with instructors, and supporting timely feedback (Dobre, 2015). Research indicates that students who perceive an LMS as useful are more likely to engage actively and persist in using the platform (Eom, 2014). Google Classroom's streamlined assignment workflow and Microsoft Teams' integrated collaboration environment both influence PU, though through distinct affordances. Given that Google Classroom and Microsoft Teams are increasingly used interchangeably across courses in Thailand, particularly in institutions where instructors choose platforms independently, students frequently gain exposure to both systems. This dual exposure creates a unique opportunity to compare their perceptions across

TAM-based constructs in real academic settings. Understanding these perceptions is critical because a platform's effectiveness is shaped not only by technical features but also by how students interpret, evaluate, and experience those features in relation to their learning needs (Garrison et al., 1999; Garrison et al., 2010; Mwalumbwe & Mtebe, 2017). Moreover, as digital-native learners expect seamless, responsive, and engaging digital environments, institutions risk inefficiencies or reduced engagement if LMS adoption decisions are made without sufficient empirical insight.

2.3.2 Perceived Ease of Use (PEU)

Perceived Ease of Use refers to the perceived effort required to use a system effectively (Davis, 1989). An LMS with intuitive navigation reduces cognitive load and allows students to focus on learning tasks rather than troubleshooting the interface. Prior studies show that clarity of layout, consistency of functions, and user familiarity significantly shape ease-of-use perceptions (Liaw et al., 2007; Wang, 2003). While Google Classroom is generally perceived as simpler, Teams users may initially require higher digital literacy but gain access to expanded collaborative features (Iftakhar, 2016).

2.3.3 Perceived Enjoyment (PE)

Perceived Enjoyment captures intrinsic motivation, whether learners find using the system enjoyable, engaging, or satisfying. Enjoyment can increase voluntary system use, interaction frequency, and overall engagement in online learning (Van der Heijden, 2004). Features such as real-time communication, interactive notifications, and user-friendly interfaces contribute to enjoyment. LMS platforms that promote positive emotional experiences have been linked to higher acceptance and better learning outcomes (Al-Rahmi et al., 2021).

2.3.4 Task-Technology Fit (TTF)

Task-Technology Fit refers to the degree to which system functionality aligns with academic task requirements, such as assignment submission, communication, collaboration, and resource access (Goodhue & Thompson, 1995). High TTF occurs when the system effectively supports the way students need to complete tasks. In LMS contexts, TTF is a strong predictor of technology utilization and perceived performance (Liaw et al., 2007; Shee & Wang, 2008). Teams' integrated collaborative tools and Classroom's structured instructional workflow both influence TTF in different ways.

2.3.5 Perceived Resources (PR)

Perceived Resources encompasses access to devices, internet connectivity, software, technical support, and institutional infrastructure necessary to use the system effectively (Park, 2009). Even if a platform is useful and easy to use, insufficient resources can hinder adoption. In Thailand, variations in device availability and internet reliability make PR an essential determinant of LMS success.

2.4 Comparative Studies on Google Classroom and Microsoft Teams

Comparative research shows that Google Classroom is often preferred for its simplicity and low learning curve, while Microsoft Teams is valued for its collaborative communication capabilities (Iftakhar, 2016; López et al., 2021). However, empirical findings remain mixed: some studies highlight Classroom's accessibility, whereas others emphasize Teams' strength in fostering interaction and group work (Altunoğlu, 2017; Emelyanova & Voronina, 2014). Few studies, however, utilize a TAM-based framework to compare both platforms in higher education contexts, particularly in Southeast Asia. This gap underscores the significance of examining students' perceptions across TAM constructs to inform institutional LMS decisions.

While previous studies have examined LMS usability and acceptance, findings remain inconsistent regarding whether platform-specific features meaningfully shape student perceptions. Some research emphasizes the role of integrated communication and collaboration tools, whereas others highlight simplicity and ease of navigation as primary drivers of acceptance. These mixed findings suggest that contextual factors, such as institutional infrastructure, instructional design, and user familiarity, may moderate TAM-based perceptions. Consequently, a comparative, perception-focused approach is appropriate for examining LMS acceptance within specific educational contexts.

2.5 Hypotheses

Based on the Technology Acceptance Model (TAM) and prior studies comparing LMS platforms, this study proposes five hypotheses to examine whether student perceptions differ between Google Classroom and Microsoft Teams. Although previous literature highlights variations in usability, collaboration, and system design across platforms, empirical findings remain mixed, suggesting that perceived usefulness, ease of use, enjoyment, task-technology fit, and resource availability may not differ substantially between systems. Accordingly, the following hypotheses were formulated:

H_a1: There is no significant difference in Perceived Usefulness (PU) between students using Google Classroom and those using Microsoft Teams.

H_a2: There is no significant difference in Perceived Ease of Use (PEU) between students using Google Classroom and those using Microsoft Teams.

H_a3: There is no significant difference in Perceived Enjoyment (PE) between students using Google Classroom and those using Microsoft Teams.

H_a4: There is no significant difference in Task-Technology Fit (TTF) between students using Google Classroom and those using Microsoft Teams.

H_a5: There is no significant difference in Perceived Resources (PR) between students using Google Classroom and those using Microsoft Teams.

3. Research Methods and Materials

3.1 Research Design and Participants

This study adopted a quantitative, cross-sectional survey design, which is appropriate for examining perceptions, attitudes, and comparative differences between groups within a defined period. A structured online questionnaire was used to capture students' perceptions of two learning management systems (LMSs): Google Classroom and Microsoft Teams. This design enables systematic measurement of Technology Acceptance Model (TAM)-based constructs and allows statistical comparison between two independent groups of learners exposed to different LMS environments.

The approach aligns with prior research using TAM in educational technology settings, where quantitative survey methods have been widely applied to assess perceived usefulness, ease of use, enjoyment, task-technology fit, and resource availability (Dobre, 2015; Park, 2009; Sun et al., 2008).

Participants consisted of 300 undergraduate students enrolled in a course at a public university in Thailand. The course is compulsory for first-year students across multiple disciplines, ensuring a diverse representation of academic backgrounds. Students were grouped separately based on both LMS course sections. Students were assigned to each LMS based on instructor-selected platforms at the course section level; therefore, group assignment was not random. Each section used either Google Classroom or Microsoft Teams for a minimum of three weeks before data collection. This ensured adequate exposure for participants to evaluate LMS functionality, usability, and appropriateness for course tasks. Participation was voluntary, confidential, and limited to students aged 18 and above. No personally identifiable information was collected.

3.2 Instrument

The survey instrument was developed based on established TAM-based constructs and modified to fit the LMS context of Google Classroom and Microsoft Teams. The questionnaire included five main constructs: Perceived Usefulness (PU), Perceived Ease of Use (PEU), Perceived Enjoyment (PE), Task-Technology Fit (TTF), and Perceived Resources (PR). Each construct was measured using multiple items on a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree). Item statements were adapted from validated TAM and e-learning acceptance literature (Davis, 1989; Park, 2009; Sun et al., 2008) and contextualized for LMS evaluation. The conceptual framework of the study is shown in Figure 1.
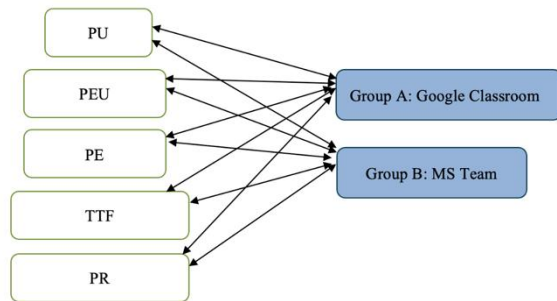

Figure 1: Conceptual Framework

3.3 Validity and Reliability

The initial questionnaire underwent expert review by three academic specialists in educational technology and social science research, who evaluated the clarity, relevance, and alignment of each item with the intended theoretical constructs. Their feedback informed several refinements that strengthened the content validity of the instrument and ensured that each item accurately represented the dimensions of the Technology Acceptance Model. Following these revisions, a pilot test was conducted with 60 students, separate from the main study sample, to examine the reliability of the instrument. As shown in Table 1, the pilot results demonstrated strong internal consistency across all five constructs, with Cronbach's alpha coefficients exceeding the 0.70 threshold commonly recommended for social science research. These procedures provided confidence that the revised questionnaire possessed stable measurement properties and was appropriate for use in the main data collection phase.

Table 1: Reliability Statistics of TAM Constructs

Construct	Cronbach's Alpha (α)	Number of Items
Perceived Usefulness (PU)	0.89	5
Perceived Ease of Use (PEU)	0.88	5
Perceived Enjoyment (PE)	0.90	5
Task-Technology Fit (TTF)	0.86	5
Perceived Resources (PR)	0.78	5

Note: All reliability coefficients exceed the acceptable threshold of 0.70, indicating strong internal consistency.

3.4 Data Collection and Analysis

Data collection was carried out using a self-administered online questionnaire distributed through official university communication channels, including LMS announcements and institutional email. All students had used their assigned platform, Google Classroom or Microsoft Teams, for a minimum of three consecutive weeks prior to completing the survey. An informed consent form was presented at the beginning of the questionnaire, outlining the study's purpose, voluntary participation, confidentiality, and estimated completion time. Only students who agreed to the consent form were permitted to proceed. The study received IRB approval, ensuring compliance with ethical standards related to participant protection, anonymity, and secure data management. No personally identifiable information was collected, and all responses remained confidential.

3.5 Data Analysis

Quantitative data were analyzed using IBM SPSS Statistics. Descriptive statistics (means, standard deviations, frequencies, and percentages) were calculated to summarize demographic characteristics and overall perceptions across the five TAM-based constructs. Reliability of the instrument was assessed through Cronbach's alpha coefficients for each construct. To examine differences between students using Google Classroom and those using Microsoft Teams, independent samples t-tests were conducted on the composite scores of all five constructs. Assumptions of normality and homogeneity of variance were confirmed prior to running the t-tests.

Prior to conducting independent samples t-tests, assumptions of normality and homogeneity of variance were examined and met. Effect sizes (Cohen's d) were also

calculated to assess the magnitude of differences between groups; all effect sizes were small, supporting the interpretation of non-significant findings.

4. Results and Discussion

4.1 Demographic Information

Demographic data were collected to describe the characteristics of the 300 students who participated in the study. Table 2 summarizes the distribution by gender, age, academic year, and faculty. Most respondents were female (57.3%), aged 17-18 years (51.7%), and first-year students (88.3%). The majority were enrolled in the Faculty of Law (54.7%), followed by Social Administration (30.3%).

Table 2: Demographic Information of Participants

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	128	42.7%
	Female	172	57.3%
	Total	300	100%
Age	17-18	155	51.7%
	19-20	140	46.7%
	21 >	5	1.7%
	Total	300	100%
Academic Year	Year 1	265	88.3%
	Year 2	35	11.7%
	Total	300	100%
Faculty/College	Law	164	54.7%
	Social Administration	91	30.3%
	Interdisciplinary Studies	14	4.7%
	Public Health	31	10.3%
	Total	300	100%

4.2 Descriptive Statistics

Descriptive results were calculated to examine students' overall perceptions of the two LMS platforms. Across both Google Classroom and Microsoft Teams, mean scores for all five constructs, Perceived Usefulness (PU), Perceived Ease of Use (PEU), Perceived Enjoyment (PE), Task-Technology Fit (TTF), and Perceived Resources (PR), fell within the "Agree" category on the 5-point Likert scale.

Table 3: Descriptive Statistics of TAM Constructs

Construct	LMS	Mean	SD
Perceived Usefulness (PU)	Google Classroom	4.12	0.56
	Microsoft Teams	4.18	0.52
Perceived Ease	Google Classroom	4.10	0.59
of Use (PEU)	Microsoft Teams	4.15	0.55
Perceived Enjoyment (PE)	Google Classroom	4.08	0.61
	Microsoft Teams	4.13	0.57
Task-Technology Fit (TTF)	Google Classroom	4.05	0.63
	Microsoft Teams	4.11	0.58
Perceived Resources (PR)	Google Classroom	4.00	0.60
	Microsoft Teams	4.06	0.59

Note: All means fall within the "Agree" range on the 5-point Likert scale.

Overall, students perceived both systems as useful, easy to use, adequately enjoyable, aligned with academic tasks, and supported by sufficient institutional and technological resources. Microsoft Teams displayed slightly higher mean scores across all five constructs, suggesting a modest preference in terms of perception, though not necessarily statistical significance.

These findings align with existing literature indicating that LMS platforms generally receive positive acceptance from students when they enhance accessibility, communication, and task management (Dobre, 2015; Eom, 2014). The slightly higher scores for Teams may be influenced by its integrated communication and collaborative affordances, features highlighted as strengths in prior studies (López et al., 2021).

4.3 Independent Samples t-Test Results

Independent samples t-tests were conducted to determine whether significant differences existed between student perceptions of Google Classroom and Microsoft Teams. Analyses were performed for all five TAM constructs. Results indicated no statistically significant differences between the platforms for any construct ($p > .05$).

Table 4: Independent Samples t-Test Summary for TAM Constructs

Construct	t-test	p-value	Interpretation
Perceived Usefulness (PU)	1.02	.31	Not significant
Perceived Ease of Use (PEU)	0.95	.34	Not significant
Perceived Enjoyment (PE)	0.88	.38	Not significant
Task-Technology Fit (TTF)	1.10	.27	Not significant
Perceived Resources	0.92	.36	Not significant

Construct	t-test	p-value	Interpretation
(PR)			

Note: No statistically significant differences were found across all constructs (p > .05).

These findings suggest that while Teams received marginally higher descriptive ratings, these differences were not large enough to be statistically meaningful. Students perceived both LMS platforms as functionally comparable in terms of usefulness, ease of use, enjoyability, appropriateness for academic tasks, and sufficiency of technological and institutional resources.

The absence of significant differences supports prior research arguing that user acceptance depends less on branded platform features and more on system usability, familiarity, and instructional integration (Liaw et al., 2007; Shee & Wang, 2008). It also reinforces TAM's assertion that user acceptance is shaped primarily by perceived usefulness and ease of use, which in this study were rated positively for both platforms.

4.4 Discussion

The findings provide meaningful insights into how undergraduate students perceive Google Classroom and Microsoft Teams as learning management systems within a Thai higher education context. The generally positive perceptions across all five TAM-based constructs reinforce the suitability of both platforms for blended and online instruction. Students' favorable views of Perceived Usefulness (PU) and Perceived Ease of Use (PEU) indicate that foundational LMS functions, such as accessing materials, submitting assignments, and communicating with instructors, were experienced as efficient and manageable regardless of platform. This aligns with previous studies suggesting that when platforms meet basic usability expectations, students are likely to respond positively, regardless of advanced features or system sophistication (Dobre, 2015; Eom, 2014).

Although Microsoft Teams demonstrated slightly higher mean scores across all constructs, these numerical differences were not statistically significant. This outcome is particularly noteworthy, as it suggests that Microsoft Teams' expanded functionality, including real-time collaboration, integrated chat, and video conferencing, did not fundamentally reshape students' overall perceptions of usefulness or ease of use. While these features may contribute to enhanced convenience and interaction (López et al., 2021), the results imply that Thai university students may prioritize simplicity, stability, and reliability over multifunctional complexity, echoing TAM's central premise that perceived usefulness and ease of use are the strongest predictors of acceptance (Davis, 1989; Sun et al., 2008).

The absence of significant differences between the two LMS platforms also reinforces existing research showing that student acceptance is shaped not only by technical features but also by prior experience, familiarity, and institutional practices (Liaw et al., 2007; Shee & Wang, 2008). In many Thai classrooms, students have long-standing familiarity with Google Workspace tools, which may neutralize the potential advantages that Microsoft Teams offers in communication or collaboration. This could explain why Microsoft Teams' enhanced capabilities did not translate into statistically higher perceptions in the present study.

The strong scores for Task-Technology Fit (TTF) suggest that both platforms effectively supported the academic behaviors required in the course, such as reading course materials, producing assignments, and participating in discussions. This is a promising result, considering the increasing integration of digital tasks across university curricula. When LMS platforms fit well with course demands, students experience fewer disruptions, which in turn supports greater engagement and academic performance (Liaw et al., 2007).

Similarly, positive perceptions of Perceived Resources (PR) indicate that students felt adequately supported in terms of device access, internet connectivity, and institutional infrastructure. This is important in the Thai educational context, where resource disparities can affect digital participation. The strong PR scores suggest that institutional support mechanisms, including campus Wi-Fi, device availability, and digital onboarding, are functioning sufficiently to remove barriers that might otherwise hinder LMS adoption.

Together, the results imply that LMS selection need not be driven exclusively by student preference. Instead, decisions may be guided by broader considerations, such as cost efficiency, licensing agreements, integration with existing technology ecosystems, and instructor readiness. Because student perceptions were largely equivalent across platforms, universities may prioritize alignment with administrative systems, technical support capacity, and long-term digital strategies. Importantly, the results also indicate that training and onboarding may play a more critical role than platform choice itself: well-supported adoption can help ensure that either Google Classroom or Microsoft Teams functions smoothly for learners.

Overall, this study adds to the growing body of research demonstrating that when LMS platforms meet baseline usability and usefulness expectations, students respond positively and consistently across systems. By situating these findings within a Thai university context, the study also highlights the broader adaptability of TAM in explaining technology acceptance in Southeast Asian higher

education. Future research may build on these insights by exploring longitudinal changes in perception, examining instructor perspectives, or incorporating multimodal data, such as system analytics, to deepen understanding of LMS interaction patterns.

The absence of significant differnces between platforms may reflect contextual characteristics of Thai higher education, where LMS use is often shaped by instructor practice, institutional norms, and student familiarity rather than platform-specific affordances. In such settings, students may adapt their learning strategies to the available systems, thereby reducing perceptual differnces across platforms. This finding supports the Technology Acceptance Model's emphasis on perceived usefulness and ease of use as context-dependent evaluations rather than inherent system properties. Nevertheless, these results should be interpreted in light of certain limiations. The study focused on students from a single course at one university, which may limit the generalization of the findings, and perceptions were measured using self-reported survey data collected at a single point in time. These limitations are addressed in greater detail in the final section of the paper.

5. Conclusion and Recommendations

5.1 Conclusion

This study compared student perceptions of Google Classroom and Microsoft Teams using five TAM-based constructs: Perceived Usefulness, Perceived Ease of Use, Perceived Enjoyment, Task-Technology Fit, and Perceived Resources. The findings demonstrate that students held consistently positive perceptions toward both platforms, with all mean scores falling within the "agree" range. Although Microsoft Teams showed slightly higher descriptive ratings across the constructs, the differences were not statistically significant. This suggests that the two LMS platforms are functionally comparable in supporting learning activities within the context of Thai higher education.

The results further highlight that core LMS expectations, such as ease of navigation, usefulness for academic tasks, and adequate technological support, were sufficiently met by both systems. These insights reinforce the applicability of the Technology Acceptance Model in explaining student acceptance of LMS platforms and emphasize that user familiarity, institutional infrastructure, and course integration may play a more influential role than specific platform features.

5.2 Recommendations

Based on the findings, several recommendations are proposed for institutions and educators. Since student perceptions of Google Classroom and Microsoft Teams were similarly positive, universities may base LMS adoption on practical considerations such as licensing arrangements, system integration, and technical infrastructure rather than anticipated differences in student preference. To enhance user experience, institutions should provide consistent training and technical support for instructors, as effective onboarding can significantly improve the perceived usefulness and ease of use of the selected platform. Likewise, offering orientation sessions or short tutorials for students at the beginning of each term can strengthen their confidence and familiarity with essential LMS functions. Instructors are encouraged to leverage collaborative and communication features, such as discussion channels, chat spaces, and shared workspaces, to enhance engagement and perceived enjoyment, particularly in online or large-enrollment courses. Finally, continual investment in digital infrastructure, including stable internet connectivity and reliable device access, is recommended to maintain high levels of perceived resources and ensure equitable learning opportunities.

5.3 Limitation and Further Study

This study has several limitations that should be considered when interpreting the results. The sample was limited to students from a single university course, which may restrict generalizability across different academic programs or institutions; future research should include broader and more diverse populations. The use of self-reported survey data may introduce response bias, and complementary qualitative approaches, such as interviews or focus groups, could provide richer insights into user experiences. Furthermore, the cross-sectional design captures perceptions at only one point in time, leaving open questions about how acceptance and usage may evolve with prolonged exposure to each LMS; longitudinal studies are recommended to address this gap. Differences in prior familiarity with Google Classroom and Microsoft Teams were not controlled for and could have influenced student perceptions; future studies might examine how prior experience or structured training affects TAM-based constructs. Additionally, incorporating variables such as digital literacy, system quality, instructor presence, or social influence may help develop a more comprehensive model of LMS adoption in higher education.

The present research did not incorporate structural equation modeling or measurement invariance testing. As the research objective focused on comparative perceptions

rather than causal relationships among TAM constructs, future studies may adopt SEM-based approaches to further validate construct relationships and cross-platform equivalence.

References

Al-Rahmi, W. M., Alzahrani, A. I., Yahaya, N., Alalwan, N., & Kamin, Y. B. (2021). Digital communication: The impact of social media on learning behavior and performance. *Education and Information Technologies, 26*(1), 1181-1198. https://doi.org/10.1007/s10639-020-10336-2

Altunoğlu, B. D. (2017). Student evaluation of a learning management system: A case study of Moodle. *Journal of Education and Practice, 8*(7), 59-65.

Berking, P., & Gallagher, S. (2016). Design considerations for e-learning systems. *Performance Improvement, 55*(5), 14-24. https://doi.org/10.1002/pfi.21687

Dahlstrom, E., Brooks, D. C., & Bichsel, J. (2014). *The current ecosystem of learning management systems in higher education*. EDUCAUSE Center for Analysis and Research.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly, 13*(3), 319-340. https://doi.org/10.2307/249008

Dobre, I. (2015). Learning management systems for higher education. *International Journal of Advanced Educational Technologies, 12*(3), 45-52.

Emelyanova, N., & Voronina, E. (2014). Introducing a learning management system at a Russian university: Students' and teachers' perceptions. *The International Review of Research in Open and Distance Learning, 15*(1), 272-289.

Eom, S. B. (2014). The effects of student-instructor interaction on student satisfaction in online learning. *Journal of Asynchronous Learning Networks, 18*(3), 1-15.

Garrison, D. R., Anderson, T., & Archer, W. (1999). Critical inquiry in a text-based environment. *The Internet and Higher Education, 2*(2-3), 87-105.

Garrison, D. R., Anderson, T., & Archer, W. (2010). The first decade of the community of inquiry framework. *The Internet and Higher Education, 13*(1-2), 5-9.

Goodhue, D. L., & Thompson, R. L. (1995). Task-technology fit and individual performance. *MIS Quarterly, 19*(2), 213-236. https://doi.org/10.2307/249689

Iftakhar, S. (2016). Google Classroom: What works and how? *Journal of Education and Social Sciences, 3*(2), 12-18.

Kurata, Y., Ishii, Y., & Ito, M. (2018). Using LMS during campus closures. *Journal of Information Systems Education, 29*(4), 215-224.

Liaw, S. S., Huang, H. M., & Chen, G. D. (2007). Surveying instructor and learner attitudes toward e-learning. *Computers & Education, 49*(4), 1066-1080.

López, Á., Alonso, L., & Barriuso, I. (2021). Microsoft Teams as a digital learning ecosystem. *Education and Information Technologies, 26*(6), 7569-7586. https://doi.org/10.1007/s10639-021-10661-7

Mwalumbwe, I., & Mtebe, J. S. (2017). Using learning analytics to predict students' performance. *International Journal of Education and Development using ICT, 13*(3), 134-152.

Ngeze, L. V. (2016). Use of Google Classroom in teaching. *International Journal of Education and Development using ICT, 12*(2), 105-127.

Park, Y. (2009). An analysis of the Technology Acceptance Model in understanding university students' behavioral intention to use e-learning. *Educational Technology & Society, 12*(3), 150-162.

Shee, D. Y., & Wang, Y. S. (2008). Multi-criteria evaluation of the web-based e-learning system. *Computers & Education, 50*(1), 1035-1053.

Sun, P. C., Tsai, R. J., Finger, G., Chen, Y. Y., & Yeh, D. (2008). What drives successful e-learning? *Computers & Education, 50*(4), 1183-1202.

Van der Heijden, H. (2004). User acceptance of hedonic information systems. *MIS Quarterly, 28*(4), 695-704. https://doi.org/10.2307/25148660

Wang, Y. S. (2003). Assessment of learner satisfaction with asynchronous e-learning systems. *Information & Management, 41*(1), 75-86.