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Perceptions and Usage of Moodle and Microsoft Teams by Students in a Rural South African University

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Abstract:

This study investigates how commerce students at a historically disadvantaged institution (HDI) in rural South Africa view and use Moodle (WiSeUp) and Microsoft Teams. Based on the extended Technology Acceptance Model (eTAM), the research employs a quantitative, descriptive approach with data collected through a self-administered online questionnaire completed by 209 students. The findings show that Microsoft Teams promotes communication and teamwork, while Moodle is mainly used for assessments and accessing academic content. Both platforms are used together, despite their different functions. Although some usability issues were noted, students generally reported satisfaction and found the platforms useful. Importantly, students were more likely to actively engage with the platforms if they valued their usefulness. The results highlight the role of perceived usefulness in maintaining interest and demonstrate how both platforms contribute uniquely yet importantly to the educational experience. The study also recommends ongoing institutional support for both tools, emphasising their complementary strengths. Moodle should be strengthened for structured academic delivery, while MS Teams should be improved to foster collaborative learning. Enhancing usability through better training, support, and orientation, especially for students with limited digital experience, is also advised to sustain engagement. These insights help inform the development of more effective digital learning strategies in resource-constrained higher education settings.

Keywords:

Moodle, Microsoft Teams, Technology Acceptance Model, Rural University, Digital Learning, Student Perceptions

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Introduction and Background

In higher education worldwide, digital learning management systems (LMS), which include virtual classroom resources and collaboration platforms, have become essential. The COVID-19 pandemic forced higher education institutions (HEIs) to adopt remote and blended learning using platforms such as Moodle, Microsoft Teams, and Zoom (Turnbull *et al.,* 2021; Afzal *et al.,* 2023). These platforms enhanced students' learning experiences. Blended learning, for example, significantly improves knowledge acquisition compared to traditional learning alone (Akkilinc, 2024). To maintain education during sudden disruptions, these platforms enable resource sharing and support both synchronous and asynchronous interactions, often boosting student engagement (Mansour, 2024).

HEIs in South Africa have also accelerated their digital transformation due to the necessity during crises and policy requirements. Even before COVID-19-induced lockdowns, many public universities used LMSs such as Moodle and Blackboard for teaching and learning (Badaru & Adu, 2022). According to Afolabi and Ajanis (2023), analysis of Moodle usage among South African rural students' infrastructure problems, data costs, and unequal device access hindered the use of the LMSs despite being considered to be beneficial. Microsoft Teams has been adopted in several HEIs to supplement the use of Moodle. This platform allows for live virtual classes and meetings, recording of classes, assessments, and collaboration Sobaih *et al.,* 2021).

Despite the widely accepted benefits of LMSs, many students still prefer in-person instruction due to various constraints, such as power outages and system usability issues (Momoti, 2024). These challenges are particularly experienced mainly by underprivileged students from historically disadvantaged institutions who report technical difficulties, anxiety, and worries about academic integrity (Ndlovu, Mthimkhulu & Gumede, 2023).

Problem Statement

In South Africa, historically disadvantaged institutions (HDIs) still struggle with inadequate infrastructure, which makes it difficult to fully utilise digital learning management systems such as Microsoft Teams and Moodle. Many students in rural universities cannot afford the data costs, and internet access is frequently erratic or slow (Moloi & Maringe, 2022). Additionally, the absence of institutional infrastructure like computer labs, campus Wi-Fi, and power backup restricts both students' and instructors' capacity to use online resources effectively (Makoe 2022; Mncube & Maharaj, 2023).

In rural HDIs, where students encounter both socioeconomic and infrastructure barriers, the digital divide is particularly noticeable (Matarirano & Musaigwa, 2025). There are growing gaps between rural HDIs and well-resourced urban institutions, due to unequal access to digital devices, mobile data, and digital skills across racial, geographic, and economic boundaries (Ndlovu & Khumalo, 2024). According to a

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case study by Ndwandwe and Msibi (2025), the majority of students at a rural university used mobile phones for learning, which are not completely compatible with platforms like Teams or Moodle. Less than 40 percent of the students had regular access to a laptop. Additionally, the study discovered that only 22 percent of the students had consistent internet access.

The variations in use of LMSs also occur within the same HEIs. This is largely attributable to instructors, who have different proficiency levels in using technology. While some make full use of platform features, some only use them to upload content or announcements, which restricts student engagement and learning (Badaru & Adu, 2022). The effectiveness of these platforms is restricted by this disjointed approach to digital education, which also lessens their capacity to bridge the learning gap in settings with limited resources. With a focus on the opportunities and challenges of digital learning platforms within the framework of a historically disadvantaged institution (HDI), this study intends to investigate how students at a rural South African university use and perceive Moodle and MS Teams.

Research Aim

Investigating how students in a rural HDI view and use Moodle and MS Teams, this study focuses on the enablers and constraints related to digital learning platforms. Understanding how students use these platforms, the contextual and infrastructural barriers they encounter, and the degree to which these resources help or impede their academic experience are the goals of the study.

Objectives:

1. To analyse the frequency and duration of Moodle and Microsoft Teams usage.
2. To assess students' perceptions of usefulness, ease of use, behavioural intention with Moodle and Teams.
3. To test the relationship between perceived usefulness, ease of use, and behavioural intention to continue using the platforms.
4. To establish the effect of behavioural intention on platform engagement.

Hypotheses (TAM-based):

- H1: Perceived ease of use positively influences perceived usefulness.
- H2: Perceived usefulness positively influences behavioural intention.
- H3: Perceived ease of use positively influences behavioural intention.
- H4: Behavioural intention has a positive influence on engagement.

Research Gap

Much of the research on LMS adoption and usage in South African higher education during and after the COVID-19 pandemic has concentrated on private or well-resourced urban universities, despite the

fact that the body of research on the topic is expanding. Badaru and Adu (2022), for instance, examined LMS use in public universities and found that platforms such as Blackboard and Moodle were widely used. However, they did not break down the results by institutional resource levels or geographic remoteness. The LMS satisfaction study conducted by Simelane, Mnisi, and Mthimunye (2025) at a university of technology does not represent rural or infrastructure-challenged environments.

In a similar vein, Momoti (2024) investigated undergraduate students studying natural sciences' perceptions of Microsoft Teams, this time in better infrastructure settings but without extensive rural HDI representation. On the other hand, very few studies examine the experiences of students at rural HDIs. While discussing Moodle adoption in rural South African universities, Afolabi and Ajani (2023) paid more attention to discursive issues than to actual student usage or perceptions. Since Ndou Mashau and Chigadas' (2023) study was limited in its scope by being conducted at a single rural university, its conclusions are regarded as narrowly focused. Localized issues like data costs, internet connectivity, and student readiness are the main focus of their research. These are significant but institution-specific factors. Therefore, rather than being generally representative of rural higher education institutions throughout South Africa, the scope of their conclusions is regional. By identifying contextual barriers and analyzing the interactions between various factors, including perceived usefulness, ease of use, and behavioural intention, our study seeks to adopt a more comprehensive approach within the Technology Acceptance Model (TAM). This makes our findings more broadly applicable and theoretically motivated by allowing for a more thorough understanding of how students interact with learning platforms across rural HDIs.

Significance of the Study

This study employs the Technology Acceptance Model (TAM) in a historically underprivileged rural South African institution, a setting that has received little attention in technology adoption research. This research is important. By examining how often and how long students use Moodle and Microsoft Teams, the study provides empirical insights into the real-world use of these platforms in a low-resource environment. To better understand how these factors influence the adoption of educational technologies in settings where institutional support and digital infrastructure may be limited, it also explores students' perceptions of usefulness, ease of use, and satisfaction.

Furthermore, the study examines the relationship between students' perceptions and their behavioural intention to continue using the platforms, as well as how that intention leads to actual engagement. These results offer valuable insights for improving digital learning and contribute to the enhancement of TAM in educational settings with limited resources. The findings can help develop targeted strategies for advancing inclusive pedagogy, instructional support, and digital access. The study's main aim is to promote equitable digital transformation in higher education by addressing the specific challenges faced

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by students at rural universities. Achieving a meaningful digital transformation in higher education requires these issues to be tackled.

Literature Review

Technology in Higher Education

Global Adoption of LMS and Collaboration Tools

Globally, higher education has become more technologically integrated over the last ten years, with Learning Management Systems (LMS) and collaboration platforms such as Microsoft Teams and Zoom becoming indispensable elements of instruction (Khrisat and Fakhouri, 2024). This shift was significantly accelerated by the COVID-19 pandemic, which forced educational institutions all over the world to switch to digital platforms as their main means of delivering instruction (Pei & Wu 2020; Smith & Brown 2023). These platforms improve teaching effectiveness and student engagement by supporting a range of academic functions such as communication, assignment submission, content delivery, and collaborative work. Moodle's open-source flexibility and integration capabilities have led to its widespread adoption, whereas Microsoft Teams has gained popularity for its collaborative tools, especially in synchronous learning environments (Kumar et al. 2022). Nonetheless, the majority of the literature currently in publication concentrates on their application in institutions with substantial financial resources, robust digital infrastructure, and institutional support.

In South Africa, a number of universities, particularly those categorized as historically privileged, have effectively integrated learning management systems (LMSs) and digital collaboration tools into blended and online courses. Simelane-Mnisi and Mthimunye (2025) argue that students in urban universities typically express high levels of satisfaction with platforms like Moodle because of dependable internet access, institutional training, and digital readiness. Because positive attitudes and actual usage are strongly correlated with perceived usefulness and ease of use, these studies support the applicability of the Technology Acceptance Model (TAM). The contextual realities of rural HDIs, where digital infrastructure and access are much less robust, are frequently ignored by this corpus of work. In order to close that gap, this study looks at how students in a rural HDI view and use Moodle and Microsoft Teams. In this setting, platform adoption may be impacted by both individual attitudes and infrastructural constraints.

Challenges in Under-Resourced Contexts: Even with the global push for digital learning, underfunded universities still have a difficult time implementing and successfully utilising LMS and collaboration tools particularly those in remote or underserved areas. This phenomenon which is sometimes referred to as the digital divide encompasses differences in institutional support systems internet connectivity device access and digital skills (Moloi & Maringe 2022). These issues are especially severe in South African

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HDIs where a large number of students use data-constrained mobile phones, experience sporadic power supplies and frequently lack instruction in digital literacy (Ndlovu & Khumalo 2024). These structural restrictions impact students' capacity to participate completely in digital learning environments, in addition to making it more difficult for them to access platforms like Microsoft Teams and Moodle. According to Ndou Mashau and Chigada (2023) a large number of students in rural universities have trouble logging in uploading assignments and even using the LMS tools which seriously undermines the intended advantages of these technologies.

Moreover, the inconsistent and superficial use of digital platforms in rural HDIs further exacerbates the inequality. Research shows that lecturers in under-resourced settings often lack adequate training or support, leading to LMS use that is limited to basic functions such as uploading PDFs or announcements, with minimal interaction or pedagogical innovation (Mncube & Maharaj, 2023). From the student perspective, the fragmentation in how different courses use digital tools, often alternating between WhatsApp, Moodle, Teams, and email, leads to confusion and platform fatigue (Mhlongo & Sibanda, 2023). These gaps not only undermine the learning experience but also limit the potential of digital education to promote equity. This study contributes to this discourse by exploring student perceptions and usage of Moodle and Microsoft Teams in a rural HDI, highlighting the structural and experiential challenges that must be addressed to ensure meaningful digital transformation in higher education.

Moodle (WiSeUp): Moodle is a popular open-source LMS that enables educational institutions to offer structured online courses. In order to preserve Moodle's core functionality while reflecting institutional identity, Moodle is frequently branded under regional names in South African universities, such as WiSeUp at certain rural institutions (Badaru and Adu, 2022). Course enrolment, online tests, assignment submission, grading content management, and asynchronous communication via forums and messaging are all supported by the platform. With the help of multimedia materials, tests, and progress monitoring, lecturers can design and oversee modules that give students a centralized, adaptable learning environment (Ndou et al. 2023). Because of its modular design and open-source nature, Moodle is a flexible and affordable way for many institutions in the Global South to meet a range of teaching needs.

As a content-driven LMS, Moodle's resilience is one of its main advantages. It is intended to facilitate the entire learning cycle, from resource distribution and course planning to evaluation and feedback (Kumar et al. 2022). Moodle is a great asynchronous learning tool that lets students in remote or low-bandwidth locations download resources and finish assignments offline, in contrast to synchronous tools that emphasize real-time engagement. This makes it especially appropriate in situations where data costs are high, or internet access is erratic (Moloi & Maringe, 2022). Its usefulness, however, is contingent upon how enthusiastically instructors utilize its interactive features, which are frequently

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underutilized in HDIs (Mncube & Maharaj, 2023). Moodle's function as an organized academic center was examined in this study by looking at how students perceive its usability, accessibility, and interaction with the course materials.

Microsoft Teams: A popular cloud-based platform for communication and collaboration, Microsoft Teams is used by many educational institutions for online meetings and learning. With features like video conferencing, real-time chat, integrated file sharing, class notebooks, breakout rooms, and calendar scheduling, Teams, which was first created for workplace collaboration, has developed to support educational use (Simelane-Mnisi & Mthimunye, 2025). Microsoft Teams, which is frequently used in conjunction with Moodle to support synchronous instruction, live discussions, and virtual group projects, was embraced by numerous South African HEIs during and after the COVID-19 pandemic, as a crucial part of their digital learning infrastructure (Momoti 2024). Because of Microsoft Teams' strong integration with Microsoft Office 365, Word documents, PowerPoint presentations, and Excel sheets can be shared easily during meetings.

The main advantage of Microsoft Teams over Moodle is its real-time collaboration features. Through features that promote engagement and immediacy, such as live classes, instant messaging, and collaborative document editing, it facilitates synchronous interaction between students and lecturers (Pei & Wu, 2020). This encourages classroom continuity and active learning in digitally connected settings. Microsoft Teams' high data usage and dependence on constant internet connectivity, however, can present difficulties in remote and underdeveloped areas (Ndou et al. 2023. According to Ndlovu and Khumalo (2024), technical obstacles such as power outages and data costs frequently limit the platform's usefulness for students in rural HDIs. To highlight the structural and experiential issues that need to be resolved to guarantee significant digital transformation in higher education, this study investigates how students in a rural HDI perceive and use Microsoft Teams.

Technology Acceptance Model

The Technology Acceptance Model (TAM) is one of the popular theoretical frameworks for comprehending how people accept and use technology, particularly in educational settings (Mastour *et al*. 2025). Three fundamental concepts form the basis of TAM: Perceived Usefulness (PU), Perceived Ease of Use (PEOU), and Behavioural Intention to Use Technology (BI) (Davis 1989). TAM was utilized in this study to investigate how commerce faculty students at a rural HDI perceive Microsoft Teams and Moodle (WiSeUp) as learning resources. Students' views that use of these platforms will improve their academic performance are referred to as PU, and their perceptions that the platforms are easy to use and require little work are reflected in PEOU. Students' propensity to continue using these platforms regularly for their academic work is the subject of BI.

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TAM offers a useful lens for pinpointing specific obstacles to students' adoption of technology in a rural university setting, where access to digital tools is frequently uneven. For instance, students' PEOU scores may be low if they find WiSeUp difficult to use or Teams too data-intensive, which can lower their PU and BI (Moloi & Maringe, 2022; Mhlongo & Sibanda, 2023). The application of TAM in this context assists in determining whether platform design or technological difficulties have a greater impact on acceptance. Additionally, this model enables comparisons between various digital platforms, determining whether usability and perceived academic value are factors that influence students' preference for using one over another. Ultimately, suggestions to increase platform adoption and improve digital learning within the Commerce faculty will be guided by the application of TAM.

Although there are three fundamental constructs in the original TAM, some recent studies have expanded the model to include other constructs such as engagement and satisfaction, particularly in educational technology studies (Kumar et al. 2022; Mthimunye &Simelane-Mnisi 2025). Similarly, the study added satisfaction (SAT) and engagement (ENG). Student satisfaction in students' learning experiences with Moodle and Microsoft Teams, whereas engagement represents the extent to which students interact with peers, instructors, and content on these platforms. There are environmental restrictions in relation to the rural HDI. Notwithstanding the platforms' perceived benefits, elements like device access and connectivity may deter participation. Incorporating these constructs offers a more comprehensive understanding of students' acceptance of their digital learning experiences.

TAM has been used extensively in e-learning research to assess how lecturers and students react to online platforms in both African and international contexts. It is implicitly assumed that the students this study targets are economically disadvantaged. However, some students come from relatively wealthy backgrounds, so this isn't entirely accurate. Perceived Usefulness (PU) and Perceived Ease of Use (PEOU) were consistently found to significantly influence Behavioral Intention (BI), despite earlier studies, including those by Badaru and Adu (2022) and Momoti (2024), which were conducted in South African institutions with greater resources and used the Technology Acceptance Model (TAM) to assess students' perceptions of Moodle and Microsoft Teams. Nevertheless, students' access to and competence with digital tools often mitigated these effects. Applying TAM in a rural, Historically Disadvantaged Institution (HDI), where such moderating factors are likely to have a more pronounced impact, enables this study to build on those findings. Doing so offers new insights into how underprivileged commerce students perceive and are affected by institutional e-learning materials, ultimately contributing to the development of more equitable digital learning policies.

Empirical Literature

Research conducted in South Africa and other developing countries consistently shows that a complex interaction of institutional, technological, and personal factors influences students' use of digital learning

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platforms like Microsoft Teams and Moodle (Sadiki et al, 2023). According to Afolabi and Ajani (2023), Moodle has been adopted by most South African universities. This aligns with the study by Badaru and Adu (2022), which found that students in resource-limited settings often face usability issues due to a lack of digital infrastructure and skills. Similarly, Ndou, Mashau, and Chigada (2023) found that students in rural universities encounter challenges such as poor connectivity, inconsistent lecturer participation, and platform overload, often switching between Teams, Moodle, and WhatsApp. Comparable issues have been reported in studies outside South Africa, in Nigeria and Kenya, where students cite the lack of digital support, device access, and high data costs as primary barriers to effective LMS use (Tarus et al. 2015; Okoro & Okoro, 2024). These findings highlight the importance of context in understanding LMS adoption and effectiveness. In their study on emergency remote teaching, Matarirano et al. (2021) found that, while students at a South African university mainly used Microsoft Teams, they showed little preparation for online learning, underscoring the challenges of adapting to digital platforms.

Recent studies have identified a few consistent factors that predict sustained use: perceived usefulness, ease of use, digital self-efficacy, and institutional support Sharma and Saini, 2022). Simelane-Mnisi and Mthimunye (2025), for instance, discovered PU to have a significant impact on their decision to keep using the Moodle LMS. Likewise, Kumar et al. (2022) demonstrated that students were more likely to use collaboration tools like Microsoft Teams over time when they had access to interactive engagement, real-time feedback, and technical dependability. According to Momoti (2024) and Mhlongo and Sibanda (2023), the incorporation of student engagement and satisfaction as extensions of the Technology Acceptance Model (TAM) has further contributed to the explanation of long-term usage patterns in developing contexts. The current study aims to determine whether Commerce students at a rural HDI use Moodle and Teams, as well as whether their experiences indicate that they will continue to use and accept these platforms. These insights are extremely pertinent to the study.

Methodology

Research Design

To find out how commerce students at a rural South African university view and use LMSs for academic purposes, this study used a quantitative research design that combines descriptive and explanatory approaches. The descriptive component's main goal was to record and summarize how students use the platforms, the obstacles they face in accessing them, and how satisfied they are with them. It aims to explain what is happening with the institutions' use of digital learning. To ascertain the factors influencing students' willingness to adopt and continue using these digital platforms, the explanatory component, based on TAM, was utilised to examine the relationships between the study's key constructs, including PEOU, PU, BI, SAT, and ENG.

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Population and Sampling

All students enrolled in the Faculty of Commerce at the selected rural HDI in South Africa make up the study's target population. The faculty had approximately 3,000 students enrolled in 2024. These students were selected because of their accessibility to the researchers. The rural HDI context of the study is especially important because it represents a digitally limited setting where differences in access to digital skills and platform engagement are more noticeable than in urban or better-resourced institutions (Moloi & Maringe, 2022).

The Commerce faculty purposively selected, and the research questionnaire was shared with students via their class WhatsApp groups. There were 209 valid responses received from the students, which were used for final analysis. This sample size is thought to be sufficient for both descriptive and inferential statistical analysis, providing valuable information about platform usage trends and the correlations between the constructs of TAM and its extensions.

Data Collection Instrument

A self-administered online questionnaire was designed in Google Forms to collect data from students at a rural HDI. The platform was selected for its accessibility and suitability for remote participation. To maximize completion rates, the questionnaire was kept simple and user-friendly, with careful consideration of participants' devices and connectivity limitations.

The instrument comprised three main sections. The demographic section captured participant characteristics such as age, gender, and year of study. The usage section measured levels of engagement, focusing on the frequency and average hours spent using Microsoft Teams and Moodle. Finally, the core constructs section assessed PU, PEOU, SAT, and BI, consistent with TAM. Items for these constructs were adapted from validated TAM instruments and rated on a 5-point Likert scale. This design provided both descriptive and explanatory data, aligned with the study's objectives.

Data Analysis

Both descriptive and inferential statistical techniques were employed to analyse the data collected. Descriptive statistics were calculated to summarise the usage patterns of Microsoft Teams and Moodle, particularly focusing on the frequency and duration of student engagement with these platforms. This provided an overview of student engagement within the context of the rural HDI under study.

For inferential analysis, paired t-tests were applied to compare students' perceptions of Moodle and Microsoft Teams, identifying potential variations in PU, PEOU, SAT, and BI between the two platforms. Analysis of variance (ANOVA) was conducted to examine whether these perceptions and usage patterns differed significantly across demographic groups, such as gender and year of study. In addition,

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correlation analyses were performed to investigate the direction and strength of relationships among the TAM constructs. Subsequently, multiple regression analysis was undertaken to identify the most influential factors affecting students' behavioural intention to continue using the platforms, thereby clarifying the relative importance of perceived usefulness, ease of use, and satisfaction. Finally, mediation analysis was performed to test the proposed pathway within the TAM framework, specifically assessing whether perceived usefulness influenced behavioural intention indirectly through perceived ease of use.

Together, these analyses provided a comprehensive understanding of students' perceptions and usage of Moodle and Microsoft Teams within a rural HDI, offering valuable insights for strategies aimed at enhancing the adoption of digital learning technologies in this context.

Presentation and Discussion of Results

This section presents the study's findings in relation to its aim, objectives, and hypotheses, with detailed explanations provided below.

The findings provide a multi-faceted understanding of students' engagement with Moodle (Wise-Up) and Microsoft Teams. The findings extend beyond the simple descriptions to include cross-platform associations, gender, and study-level differences.

Patterns of Platform Use

Main Usage Patterns (Frequency, Hours/Week, Tabs/Features)

Usage was defined in terms of frequency of platform, the time spent on platforms, and the platform tabs used. Descriptive statistics indicate that both Moodle and MS Teams are a fundamental part of students' learning routines. For Moodle, more than 70% of students reported using it "often" or "very often," while Teams had nearly identical patterns with over 73% using it "often" and "very often," as shown in Figure 1. Figure 2 presents the average time spent per week and the tabs used per platform. Weekly time spent averaged 3.08 hours for Moodle and 3.72 hours for MS Teams, indicating consistent, moderate student engagement across both platforms. Regarding the number of tabs used, Moodle, however, recorded a higher average tab use (5.18) compared to MS Teams (4.21), pointing to broader exploration of its features.

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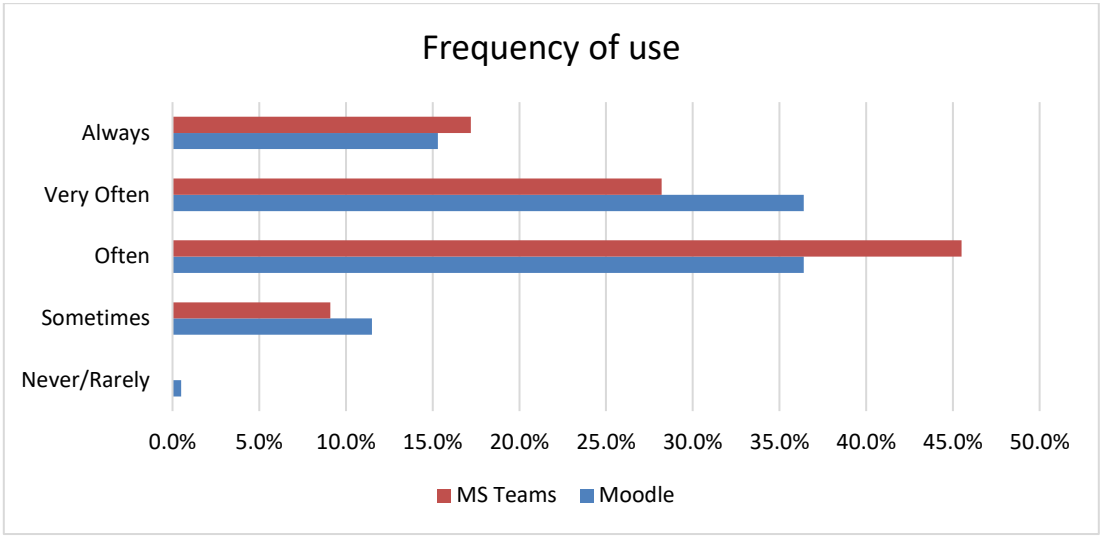


Figure 1: Frequency of platform usage for Moodle and MS Teams

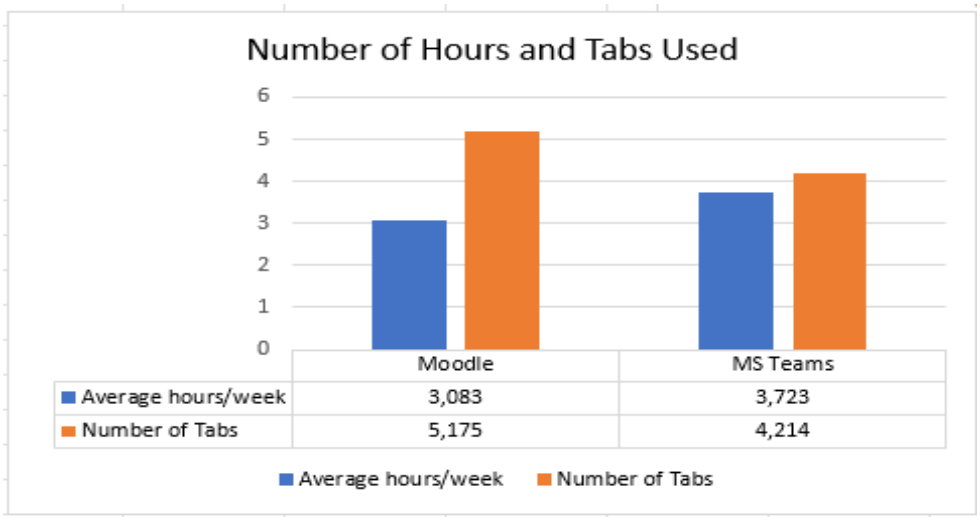


Figure 2: Average time spent per week, and number of tabs used per platform

To have a deeper understanding of the functions being utilised, the platforms' tabs used, and their frequency was explored. An analysis of the patterns of use across Moodle and MS Teams shows areas of overlap and difference in how the platforms were engaged. As shown in Table 1, Moodle was primarily used for assessment-related functions. The highest use counts in Moodle were observed in uploading assignments (176), writing tests (169), completing quizzes (162), and viewing assessment marks (148). This indicates that Moodle acts as the primary site where students complete and monitor academic evaluations. These results are consistent with those of Pei and Wu (2020) and Smith & Brown (2023), who confirm that these platforms provide a variety of academic functions, including communication,

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assignment submission, content delivery, and collaborative work, which enhance teaching effectiveness and student engagement. In addition, Moodle also supports access to learning content, such as course notes and downloading video lectures. Moodle is, therefore, used as a repository for academic resources as well as a site for assessment activities. This outcome is consistent with that of Ndou et al. (2023), who affirm that lecturers can create and manage modules that provide students with a centralized, flexible learning environment with the aid of multimedia resources, assessments, and progress tracking.

MS Teams, in contrast, is primarily used for content sharing and collaborative engagements. The frequently accessed functions included files/documents (161), assignments (141), and posts for discussions and interactions (122). Although assignments and grades tabs are assessment-related functions used in MS Teams, the major function is enabling engagements through student collaboration and communication. Use of tools such as class notebooks, SharePoint, forms, and whiteboards further supports the role of MS Teams in promoting engagement. According to Pei and Wus (2020), research on MS Teams encourages participation and immediacy through collaborative document editing, live classes, instant messaging, and synchronous interaction between students and instructors. This result is in line with this finding. Whilst Moodle is leveraged for individual assessments and structured course delivery, MS Teams is oriented towards collaborative communication, resource sharing, and peer engagement.

Despite the differences in use of these platforms, both incorporate assessment features, suggesting that students use the platforms as complementary to their academic work. Moodle is used for formal academic processes tied to teaching, learning, and assessment, whilst MS Teams promotes the collaborative dimension of learning, enabling interaction, teamwork, and shared access to resources. It has to be noted, however, that the use of some functions is highly dependent on the lecturer. There are some tabs, such as assignments, grades, video lectures, and tests, that students will not need to use unless led by the lecturer. As such, some of the uses are high as a result of the lecturers' actions.

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Moodle Tab	Count	MS Teams Tab	Count
Uploading assignments	176	Access files/documents	161
Writing tests	169	Assignments	141
Quiezzes	162	Posts: For discussions, and interaction with team members.	122
Accessing course content (videos, notes, articles, e-books)	153	Class Notebook	98
Viewing assessment marks	148	Grades	96
Downloading video lectures	86	Calendar	61
Calendar	76	SharePoint	58
Discussion boards	37	Forms	46
E-mails	36	Stream	36
Blogs	5	Whiteboard	27

Table 1: Tab Usage Patterns across Moodle and MS Teams

Cross-Platform Consistency in Engagement

Bivariate correlations were conducted to assess the associations between the use of Moodle and MS Teams using the three dimensions: frequency of use, hours per week, and number of tabs used. The correlation and regression analyses indicate a strongly significant positive association between frequency of use, number of hours, and functions of platforms, as shown in Tables 2 and 3. Functions used (tabs) retained the strongest effect (Pearson r = 0.593, Spearman ρ = 0.593, b = 0.570, t = 10.76, R^2 0.352), meaning that students who deeply engage in the functions of one platform are likely to do the same in the other platform.

Construct Pair	Pearson's r	p-value	Spearman's rho	p-value
Moodle vs Teams (Frequency)	0.403	0.000	0.403	0.000
Moodle vs Teams (Hours/week)	0.520	0.000	0.391	0.000
Moodle vs Teams (Tabs)	0.593	0.000	0.593	0.000

Table 2: Pearson and Spearman Correlations

Dependent Variable (Moodle)	Independent (Teams)	β (coef.)	SE	t	p-value	95% CI	R^2
mdusefreq	tmusefreq	0.412	0.072	5.69	0.000	0.269 – 0.555	0.162

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mdusewk_hr	tmuserwk_hr	0.513	0.088	5.83	0.000	0.340 – 0.688	0.270
mdtabs_nm	tmtabs_nm	0.570	0.053	10.76	0.000	0.465 – 0.674	0.352

Table 3: Regression Results (Moodle on Teams)

The results highlight that Moodle and MS Teams are widely used and are also complementary platforms serving different functions. Moodle is the more feature-intensive platform, focusing more on assessment-related activities, whilst MS Teams has a slightly higher usage and is dominant in collaboration. This finding is in line with a study by Viktorija Florjančič and Łukasz Wiechetek (2022) that confirms Moodle and MS Teams can be combined. Moodle is portrayed as a more feature-rich and complex tool that is useful for administering structured courses, while MS Teams is stronger at collaboration integration and real-time communication. The two platforms complement each other, with strong cross-platform consistency in engagement. Ultimately, both platforms support students' learning primarily through their assessment functions, supplemented by collaboration and content access. The finding is supported by Viktorija Florjančič and Łukasz Wiechetek (2022), who confirm that Moodle and Teams have a big impact on student engagement and performance. Students value accessibility and connectedness, and the platform's design affects how well they interact and assess.

Perceptions of Usefulness, Ease of Use, and Satisfaction

The study also assessed the perceptions of students regarding the perceived ease of use (PEOU), perceived usefulness (PU), and satisfaction (SAT) with Moodle and MS Teams. This section discusses the findings of the tests carried out, including reliability and validity of the measurement instrument, descriptive statistics, and differences by gender and study year.

Reliability and Validity of Scales

Reliability and validity were established with the use of Cronbach's Alpha, composite reliability (CR), factor loadings, and average variance extracted (AVE), and the results are presented in Table 4. The STATA version used for analysis does not provide CR and AVE, and as such, these were calculated manually using the following:

$$\text{AVE} = (\sum \lambda_i^2) / (\sum \lambda_i^2 + \sum(1 - \lambda_i^2))$$

$$\text{CR} = ((\sum \lambda_i)^2) / (((\sum \lambda_i)^2) + \sum(1 - \lambda_i^2))$$

The process of establishing the validity of constructs led to the dropping of some items from the PEOU and PU constructs. In the PEOU construct, items peou1, peou2, peou6, and peou7 were dropped, whilst item pu1 was dropped from the PU construct. As such, the reliability, validity, and further inferential statistics presented are based on the retained items. The results show that all constructs had Cronbach's

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Alpha coefficients and composite reliability values above the generally accepted 0.7 (Hair et al. 2019), confirming the reliability of the items measuring the constructs. The factor loadings of all items were above 0.5, whilst the majority of AVEs were also above 0.5 bar for PEOU, which had 0.489. Whilst this is below the threshold of 0.5 (Hair et al., 2019), it is very close and meets all the other tests, making it acceptable. These tests confirm the reliability and validity of the measurement.

Construct	Items	Factor loadings	Composite reliability	Cronbach's Alpha	Average Variance Extracted
Perceived Ease of Use	peou3	0.583	0.739	0.739	0.489
	peou4	0.705			
	peou5	0.794			
Perceived Usefulness	pu2	0.752	0.857	0.857	0.505
	pu3	0.781			
	pu4	0.546			
	pu5	0.606			
	pu6	0.726			
	pu7	0.814			
Satisfaction	sat1	0.772	0.777	0.822	0.560
	sat2	0.950			
	sat3	0.427			
Behavioural Intention	bi1	0.833	0.831	0.742	0.559
	bi2	0.552			
	bi3	0.881			
	bi4	0.678			

Table 4: Reliability and validity

Descriptive Statistics

The results from the descriptive analysis provide insights into the students' perceptions regarding Moodle and MS Teams. The perceptions are based on the platforms' ease of use, usefulness, satisfaction, and behavioural intention. To determine the perceptions, respondents were asked to rate

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items on a 5-point Likert scale. The means and standard deviations of their responses per construct are presented in Table 5.

Construct	Mean	Std. Dev
PEOU	3.36	0.86
PU	3.62	0.77
SAT	3.79	0.80
BI	3.68	0.87

Table 5: Descriptive Statistics of Constructs

Respondents perceived the use of Moodle and MS Teams to be moderately easy. Whilst the mean of 3.36 was above the midpoint of the 5-point scale, the rating was the lowest compared to other constructs. This implies that students considered this construct to be slightly problematic, meaning the platforms are not very easy to navigate. This finding corroborates prior studies that considered usability to be a constraint to educational technology adoption (Gamede et al., 2022; Sadiki et al., 2023; Zwane & Mudau, 2024). Zwane and Mudau (2024) argue that rural students faced challenges such as connectivity, limited ICT skills, and online support systems, which affect the PEOU.

With regards to usefulness, respondents perceived the platforms moderately useful for their learning activities, with a mean of 3.62 and a standard deviation of 0.77. This means is higher than the PEOU, meaning that students attach more value to the use of the platforms than they find them easy to use. As indicated in the usage, students benefit from the use of the platforms by accessing learning content, communicating with others, as well assessments. These benefits are highly valued by students, although they find navigation of the system not easy. Similar claims are made by Gamede et al (2022), who argue that Moodle benefits students by facilitating learning and communication regardless of the associated challenges.

Satisfaction had the highest mean, indicating that students were content with the use of the platforms despite the challenges they face. This points to positive feelings with platform interactions and suggests that students managed to achieve their academic goals through platforms. Behavioural intentions had the second-highest mean from satisfaction. Students expressed moderate intention to continue using the platforms. The relatively high BI score demonstrates that the usefulness and satisfaction from the platforms encouraged sustained engagement.

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Structural Relationships Among TAM Constructs

The third objective of this study aimed to test the relationship between perceived usefulness (PU), perceived ease of use (PEOU), and behavioural intention (BI) to continue using Moodle and Microsoft Teams. This objective aligns with the Technology Acceptance Model (TAM) hypotheses.

Bivariate Correlations Between TAM Constructs

To establish if the variables being tested had a relationship, the Bivariate correlation tests were done, using Pearson's and Spearman's rank correlation tests. This is because effects between variables are only possible if there are associations among the variables (Matarirano et al., 2019). This step served to summarise the direction and magnitude of bivariate associations anticipated by theory, screen for potential multicollinearity among predictors, detect possible data or coding problems, and inform model specification. Using correlations as a preliminary diagnostic is standard practice in applied regression analysis (Kutner, Nachtsheim, & Neter, 2004). The results of the test are presented in Table 6 and 7.

	PEOU	**PU**	**BI**
PEOU	—	0.066 (0.349)	-0.062 (0.377)
PU	0.066 (0.349)	—	0.697 (<.001)
BI	-0.062 (0.377)	0.697 (<.001)	—

Table 6: Bivariate correlations among constructs (Panel A: Pearson bivariate correlations)

Notes. Entries are Pearson r with two-tailed p-values in parentheses.

	PEOU	**PU**	**BI**
PEOU	—	0.062	-0.043
PU	0.062	—	0.649
BI	-0.043	0.649	—

Table 7: Bivariate correlations among constructs (Panel B. Spearman rank correlations (ρ))

Table 7 reports Pearson correlations (r) with two-tailed p-values in parentheses (n=206). PEOU was found to have no significant relationship with either PU (r = 0.066; p = 0.349) or BI (r = -0.062; p = 0.377). In contrast, PU had a statistically significant relation with BI (r = 0.697; p = <0.001). PU association with BI is strong, whilst the association with PEOU is negligible. In context, the findings show that students who reported Moodle and MS Teams to be useful also reported greater intentions to continue using them, whilst PEOU showed no meaningful bivariate correlation with usefulness and intention. Because

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the correlation between the predictors PU and PEOU is very small (r = .066), multicollinearity is unlikely. Spearman rank correlations also retained a similar pattern of results, confirming no problem with collinearity among predictors (PEOU–PU ρ = .06). The regression analysis was performed after confirming associations between variables and collinearity.

Regression Tests

Robust OLS regression model with standard errors was used to predict the effect of PEOU and PU on BI. Robust standard errors were used to guard against heteroskedasticity. The results are presented in Table 8.

Predictor	b	SE (robust)	t	p	95% CI lower	95% CI upper
pu_score	0.690	0.060	11.490	0.000	0.572	0.809
peou_score	-0.102	0.057	-1.790	0.074	-0.214	0.010
_cons	1.741	0.254	6.860	0.000	1.241	2.241

Table 8: Robust OLS predicting Behavioural Intention

Model fit: N=206, F=67.16, R-squared=0.497, Root MSE=0.579

As indicated in Table 8, the model fit was strong, $F(2, 203) = 67.16$, $p < .001$, with R-squared = 0.497 (Root MSE = 0.579). Based on the t-statistic of 11.49 and p-value of 0.000, PU was a large and statistically significant positive predictor of BI. Holding PEOU constant, a one-point increase in PU is associated with a 0.69-point increase in BI. As found in the Bivariate correlation tests, the effect of PEOU on BI was not statistically significant ($t = -1.79$, $p = .074$). Consistent with several studies based on TAM, usefulness is the key driver of intention, whilst PEOU does not (Matarirano et al., 2021; Ngobeni & Makhitha, 2025). Although PEOU does not exhibit a reliable direct effect in this study, it may operate primarily through influencing PU (Jere, 2020; Matarirano et al., 2021).

Behavioural Intention and Engagement

The final objective of the study attempted to establish the effect of BI on the actual engagements with the selected platforms.

Bivariate Correlations Between Behavioural Intention and Engagement Indicators

The Bivariate correlations between BI and engagement, through use frequency, hours spent on the platforms, and the functions used, were estimated using Pearson correlation. As presented in Table 9, BI was positively associated with all indicators of engagement: avfreq (r = 0.243, p < .001), avhrs (r =

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0.169, p = .015), avtabs (r = 0.185, p = .008), and the composite index (r = 0.282, p < .001). This paved the way for regression analysis to estimate the effect of BI on engagement.

Pair	r	p-value	Significance
BI ↔ avfreq	0.2425	0.0004	***
BI ↔ avhrs	0.1694	0.0149	*
BI ↔ avtabs	0.1848	0.0078	**
BI ↔ engage_index	0.2821	0.0000	***

Table 9: Pearson correlations between BI and engagement

Regression Analysis – BI and Engagement

Generalized regression models with robust standard errors were estimated to examine the effect of BI on four engagement outcomes – frequency of use, mean hours per week, functions used, and composite engagement. The outcomes were modeled with the appropriate families/links: frequency (ordinal, cumulative logit), tabs/features used (Poisson, log link), hours per week (Gaussian, identity), and a composite engagement index (Gaussian, identity). The results, presented in Table 10, show that BI positively influenced all four indicators of engagement, indicated by p-values of less than 0.05. In summary, students with higher BI who use Moodle and MS Teams continue to use the platforms more, for longer, and with more features.

Outcome	Family / Link	Effect metric	SE	95% CI	z	p
avfreq	Ordinal / logit	OR	0.129	1.31–2.17	4.05	<.001
avtabs	Poisson / log	IRR	0.046	1.01–1.21	2.20	.028
avhrs	Gaussian / identity	B	0.277	0.090–1.175	2.28	.022
Engagement index	Gaussian / identity	B	0.058	0.132–0.358	4.24	<.001

Table 10: GSEM results - BI predicting engagement (robust SEs)

Overall, A number of engagement dimensions, such as frequency, breadth, duration, and overall involvement, are consistently and significantly predicted by behavioural intention.

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Conclusion

The study's conclusions highlight a dual platform learning ecosystem where Microsoft Teams and Moodle serve complementary roles in students' academic journeys. Moodle is primarily used for assessment-related activities such as submitting assignments, taking tests, and accessing course materials. In contrast, MS Teams, which offers features like shared documents, class discussions, and real-time interactions, is mainly used for collaborative learning and communication. Both platforms are seamlessly integrated into students' learning routines, show high levels of engagement, and maintain consistent usage patterns across platforms despite their different strengths. Students who frequently and extensively use one platform often also use the other, indicating that the platforms work best together rather than separately.

The study also demonstrates that the main factor influencing students' intention to continue using both platforms is perceived usefulness (PU). Additionally, despite moderate ease-of-use ratings, satisfaction was relatively high. This indicates that students value the platforms' educational benefits more than their ease of use. Behavioural intention (BI) was found to be a significant predictor of actual usage behaviours, such as how often students engage, the time they spend, and the number of features they utilize. These findings support the relevance of the Technology Acceptance Model (TAM) in this context and show that ongoing engagement with digital learning is more affected by perceived academic value and satisfaction than by usability.

Recommendations

Since Moodle and MS Teams are essential for student learning, educational institutions should continue integrating them and promoting their complementary use. In particular, Moodle should be strengthened and promoted as the primary tool for academic tracking, structured content delivery, and assessment. MS Teams should be enhanced simultaneously because of its advantages in group projects, live communication, and collaborative learning. Since instructor-led activities have a significant impact on student engagement, instructors and course designers should be trained and encouraged to utilize the full range of tools available on each platform. Students can experience a more comprehensive and engaging educational journey when both platforms are used more effectively together.

Additionally, attention should be given to improving the perceived usability of both platforms. Although students generally found the platforms helpful, usability remains a moderate concern. Institutions should invest in streamlined navigation guides, ongoing technical support, and student orientation programs, especially for first-year students and those with little prior ICT experience. These efforts should focus on reducing barriers to effective use, increasing confidence in using digital tools, and ultimately enhancing

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both perceived and actual ease of use. Improvements to the user experience can also foster long-term engagement and behavioural intention.

Limitations

It is important to recognize that this study has several limitations that may influence the generalizability and interpretation of the findings. First, the research was carried out at a single rural, historically disadvantaged institution (HDI), which could limit the relevance of the results to other South African universities, especially those in urban or better-resourced environments. Second, the study depended on self-reported data, which are inherently prone to biases such as inaccurate memories and social desirability, potentially impacting the accuracy of reported usage patterns and perceptions. Finally, the cross-sectional design of the study means it only captured student engagement and perceptions at one point in time, which limits the ability to observe changes over time or establish causal links between platform use, perceptions, and engagement outcomes. These limitations underscore the need for caution when generalizing the results and highlight several areas where future research can build on and improve these insights.

Future Research

Future studies should examine platform usage among various student demographics with a focus on gender and academic level. When the data is broken down, significant variations in how different groups view and use Moodle and MS Teams may become apparent. Understanding these trends would enable the creation of more focused interventions, such as providing first-year students with extra assistance or addressing possible gender-based disparities in platform navigation or preferred methods of collaboration. After that, customized tactics could be used to raise satisfaction and engagement among various student populations.

Future research on students' actual experiences with the platforms should also use mixed-method or qualitative approaches. A deeper understanding of issues like usability motivation, digital literacy, and instructor support may be revealed through focus groups or interviews. How new features like AI integration, automated feedback tools, or advanced analytics affect learning outcomes and student engagement should also be the subject of future research. Research must be conducted continuously as digital learning environments develop in order to keep technology in line with the pedagogical and emotional requirements of students in online and hybrid learning models.

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