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ACCEPTABILITY AND SATISFACTION OF GOOGLE CLASSROOM AMONG HIGHER EDUCATION STUDENTS: EVIDENCE FROM THE COVID-19 PANDEMIC

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ABSTRACT The present study aimed to determine students' acceptance and satisfaction with Google Classroom as an online learning management system during the coronavirus disease 2019 pandemic. It focused on determining the acceptance level regarding perceptions of usefulness, ease of use, and accessibility, and the satisfaction level with respect to the quality of interaction, learning process, engagement, and academic support. Descriptive correlational research was used, and 356 respondents were selected via stratified random sampling. The results showed that acceptability was high ($M = 3.99$, $SD = 0.73$) and that satisfaction was also high ($M = 3.81$, $SD = 0.80$). Differences were statistically significant for the course but not for age and year level. There was a moderate positive correlation between acceptability and satisfaction ($r = 0.412$, $p < .001$), suggesting that those who view Google Classroom as helpful and user-friendly are more satisfied with the system. This research provides evidence for the validity of the Technology Acceptance Model and underscores the importance of usability and accessibility in determining students' perceptions. Yet, accessibility cannot be overlooked.

Keywords: acceptability, satisfaction, Google Classroom, learning management system, COVID-19

INTRODUCTION

The coronavirus (COVID) outbreak was an unprecedented interruption that forced universities around the world to shift from conventional classroom teaching to online teaching overnight. Such changes have revolutionized the very concept of education, which can no longer occur without the aid of digital media. Without physical classrooms, reliance on LMSs has become indispensable, making them the foundation of the entire process. LMS became not only a place to store learning materials but also an interaction tool that facilitated the exchange of ideas and student evaluation. Among the various LMS, Google Classroom has become one of the most popular platforms for education.

Analyzing students' perceptions of digital learning systems is crucial given their rapid and widespread adoption, and particular emphasis must be placed on acceptance and satisfaction. The term "acceptance" describes a user's level of usefulness perception, as well as perceptions of the system's ease of use and accessibility, whereas "satisfaction" is broader, encompassing students' experiences using the platform to learn, engage, and interact. Both concepts play an important role in evaluating the efficiency of LMS platforms, particularly in emergency remote learning, when students must use such technologies under duress. Unlike regular online learning programs, this approach does not allow enough time for preparation.

Google Classroom has been widely recognized for its ability to support flexible, collaborative learning environments. The platform allows students to access course materials, submit assignments, receive feedback, and communicate with instructors in a centralized digital space. Integration with popular software such as Google Docs, Google Drive, and Google Meet enhances its usefulness and makes it easier to handle academic assignments. The use of these platforms may increase student engagement and participation in learning processes (Albashtawi & Bataineh, 2020; Setiawan et al., 2021). This allows for better organization, making this tool extremely beneficial for online learning and helping students learn to handle things on their own.

In addition to helping students complete their assigned tasks, Google Classroom supports self-regulation and the development of ICT skills. It helps students manage time effectively by requiring them to be proactive and complete their tasks independently, without constant instructor supervision. However, the success of these aspects depends on whether students accept the software. Students who consider the software complicated and irrelevant to their learning needs would find it challenging to engage with it. Therefore, it is essential to understand the determinants of acceptance.

The Technology Acceptance Model (TAM) provides a well-tested theoretical basis for analyzing the adoption of digital technology by individuals. In particular, according to TAM, usefulness and ease of use are the major predictors of individuals' attitudes towards adopting the technology (Jakkaew & Hemrungrote, 2017). Usefulness refers to whether a person believes that using the system will increase their efficiency, while ease of use suggests that using the system does not require effort. In relation to the LMS, the two variables are students' adoption of the platform and their attitudes toward using it. Thus, when the students find Google Classroom both useful and easy to use, they develop a favorable attitude toward it and start using it actively.

Even though acceptability is a key determinant of LMS uptake, it is also critical to consider satisfaction when assessing LMS effectiveness. The term 'satisfaction' refers to the extent to which the learners appreciate their experience with the use of the system. For instance, Heggart and Yoo (2018) suggested that LMS platforms should be supplemented with effective pedagogical methods to ensure learners are satisfied with the system. Therefore, there is a clear link between technology and pedagogy in the context of using the LMS.

Furthermore, satisfaction is closely associated with student engagement and persistence in online learning environments. Students who are satisfied with an LMS are more likely to participate actively in learning activities, complete assignments, and interact with instructors and peers. Conversely, dissatisfaction may lead to disengagement, reduced motivation, and lower academic performance. This underscores the importance of examining satisfaction as a multidimensional construct that encompasses both technological and instructional factors.

Despite numerous research articles on LMS acceptance, there is still a need to examine acceptance and satisfaction in tandem, especially in higher education institutions amid the current Coronavirus pandemic. Past research articles tended to investigate these two concepts independently, focusing either on technology acceptance or on user satisfaction. Nonetheless, these two concepts tend to be closely associated, whereby student acceptance of the system may lead to user satisfaction, and user satisfaction may lead to technology acceptance.

Another important aspect to consider is how students' perceptions vary across certain demographics and other academic features. Features such as age, year level, and course of study may affect students' familiarity with technologies and their learning. For example, students who take courses related to technologies may find online courses easier to follow than students who have to deal with practical tasks.

Apart from personal attributes, external factors such as internet connectivity, device availability, and technical support also affect how students experience Google Classroom. Even though Google Classroom is meant to be user-friendly, external factors also influence its effectiveness. Students who lack access to the internet and other technological means may find it hard to engage in e-learning activities on this platform. Such problems may hinder not only acceptance but also satisfaction, as users may view it as ineffective in some respects.

The relationship between the features of technology and context shows the necessity to analyze the effectiveness of the LMS platform from the perspective of the larger education system. For an efficient implementation of this tool, not only is a proper platform required, but a favorable environment is also needed to allow students to use the system effectively.

In addition, the shift to e-learning has shown that both learners and educators need digital literacy skills. Learners have had to learn how to interact in the digital environment, use digital resources and tools, and communicate through it.

Given these, this study intends to measure the levels of acceptability and satisfaction among students enrolled in institutions of higher learning using Google Classroom as the learning management system. This study will also investigate differences in acceptability and satisfaction across selected profile variables, as well as the relationship between acceptability and satisfaction.

In particular, the research contributes to the existing knowledge base by providing a holistic assessment of the concepts of acceptability and satisfaction within a single study. It also provides insights into how the concepts differ across user categories and their determinants, including both technology- and context-related factors. The results of the study will help inform policies for implementing the LMS.

Through this investigation, the study aims to support the development of more inclusive and effective digital learning environments that respond to students' diverse needs. By understanding the factors that influence acceptability and satisfaction, higher education institutions can implement targeted strategies to enhance the quality of online learning and ensure that technological innovations meaningfully contribute to student success.

METHODOLOGY

This study employed a descriptive-correlational research design to examine students' levels of acceptability and satisfaction with Google Classroom and to determine differences and relationships among the variables. The descriptive component assessed students' perceptions, while the correlational component examined the relationship between acceptability and satisfaction.

Participants in this study were made up of 356 respondents enrolled at Guimaras State College using stratified random sampling. Stratified random sampling is used to ensure equal representation of students across fields and year levels. The use of various strata helped provide an in-depth examination of the differences in perceptions.

Data were collected using a questionnaire developed from an already validated instrument. The two components of the questionnaire are acceptability and satisfaction. Acceptability is measured by usability, easy-to-use, and accessibility. Satisfaction is measured by the quality of interactions, learning, engagement, and academic support.

Participants' responses were rated using a five-point Likert scale, with values ranging from 1 (Very low) to 5 (Very high). The mean scores were rated using standard values to ensure uniformity in data interpretation. Test-retest reliability generated Cronbach's alphas of 0.89 for acceptability and 0.87 for satisfaction.

Data analysis was conducted using SPSS. The mean and standard deviation were used as descriptive statistics to assess the extent of acceptability and satisfaction levels. Tests of significance, such as the Mann-Whitney U test and the Kruskal-Wallis H test, were conducted as nonparametric tests to assess differences among groups. Pearson correlation was performed to establish the relationship between acceptability and satisfaction.

All ethical concerns were strictly adhered to throughout this research process. The participants were first told about the purpose of conducting this study, and their involvement was

RESULTS AND DISCUSSION

Level of Acceptability of Google Classroom

Table 1. Level of Acceptability of Google Classroom (TAM-Based)

Indicator	M	SD	Interpretation
Ease of Use	4.19	0.68	High
Usefulness for Learning	4.15	0.66	High
Helps in Online Research	3.97	0.76	High
Helps Find Appropriate Links	4.03	0.70	High
Supports Academic Tasks	3.94	0.73	High
Accessibility	3.66	0.86	High
Overall Mean	3.99	0.73	High Acceptability

The study found that students demonstrated a high level of acceptance of Google Classroom ($M = 3.99$, $SD = 0.73$). This indicates that students generally perceive the platform as a reliable, functional, and effective learning management system during the COVID-19 pandemic. Acceptability, as operationalized in this study, includes perceived ease of use, usefulness, and accessibility—three key dimensions aligned with the Technology Acceptance Model (TAM).

Among the measured variables, ease of use ($M = 4.19$, $SD = 0.68$) was rated highest. This implies that Google Classroom is user-friendly and easy to use, an important determinant for adopting any new technology. Ease of use plays an important role in shaping people's perceptions of technology; as Jakkaew and Hemrungrote (2017) found, the perception that the system requires little effort from the user results in positive attitudes towards technology. The high rating in this dimension indicates that students quickly adapted to the platform despite the abrupt transition to online learning.

Closely related to ease of use is perceived usefulness ($M = 4.15$, $SD = 0.66$), which also received a high rating. This indicates that students recognize Google Classroom as beneficial for accomplishing academic tasks such as accessing learning materials, submitting assignments, and participating in online discussions. The research results validate the claim made by Albashtawi & Bataineh (2020) that Google Classroom improves students' participation and supports their education through a systematic, efficient means of conducting educational processes. Likewise, Setiawan et al. (2021) have noted that Google Classroom's effectiveness stems from its integration with Google products.

Additional indicators such as helping students find appropriate links ($M = 4.03$) and facilitating online research ($M = 3.97$) further reinforce the platform's role as a centralized learning environment. These features enable students to access a wide range of resources, thereby supporting independent learning and information literacy. The ability to organize and retrieve learning materials efficiently is particularly important in online learning contexts, where students rely heavily on digital resources.

However, the highest score in accessibility ($M = 3.66$, $SD = 0.86$) became the lowest among the acceptability indicators despite being within the category of “high.”

It can be inferred from this result that, even when accessibility is perceived as good, students face hidden obstacles in using the application. External factors can cause this issue because students cannot be using the application when the Internet connection is poor or they lack the appropriate devices and technology.

This result highlights a major concern regarding online learning – the gap between acceptance and accessibility of systems. Although Google Classroom is accessible, its effectiveness depends on the environment. Without consistent internet connectivity and access to proper technology, learners will face difficulties accessing the system. Theoretically, the results provide strong validation of the Technology Acceptance Model. The fact that high marks have been given for ease of use and usefulness indicates the importance of these elements in determining students’ acceptance of Google Classroom (Jakkaew & Hemrungrote, 2017). Nevertheless, the low accessibility score indicates that, in some developing countries such as Thailand, where infrastructure is vital for the adoption of new technologies, TAM should be supplemented by other factors.

, the study’s results concur with Heggart and Yoo (2018), who stressed the importance of an enabling environment for the proper functioning of LMS applications, as well as efficiency. The lack of supportive structures could make an otherwise acceptable system underperform.

Overall, the results indicate that Google Classroom is a highly acceptable LMS, particularly in terms of usability and functionality. However, accessibility remains a critical concern, highlighting the need for institutional interventions to address infrastructural challenges. This underscores the importance of viewing acceptability not only as a function of system design but also as a product of the broader educational context.

Level of Satisfaction of Students

Table 2. Level of Satisfaction (Experience-Based)

Indicator	M	SD	Interpretation
Liked Using Google Classroom	4.15	0.66	High
Interaction (Teacher/Classmates)	3.81	0.85	High
Writing vs Paper Notes	3.53	1.00	High
Awareness of Content	3.99	0.69	High
Academic Productivity	3.43	0.90	High
Engagement (Notes/Drafts Work)	3.94	0.73	High
Overall Mean	3.81	0.80	High Satisfaction

The study revealed that students demonstrated a high level of satisfaction ($M = 3.81$, $SD = 0.80$) in using Google Classroom. This suggests that students generally had positive experiences with the platform, particularly in terms of engagement, interaction, and learning support.

The indicator receiving the highest rating among students was liking Google Classroom ($M = 4.15$, $SD = 0.66$). It implies that the learners have positive attitudes toward this learning tool. This attitude can be explained by Google Classroom's intuitive interface and its opportunities for students to communicate with peers and collaborate. Therefore, students not only accept the platform but also like working with it during their studies.

The high perceptions of indicators related to engagement ($M = 3.94$) and content awareness ($M = 3.99$) demonstrate that Google Classroom is effective in promoting engagement and increasing awareness. These outcomes align with the study by Fahriany et al. (2022), which demonstrates the effectiveness of Google Classroom in engaging students in learning activities.

Similarly, interaction with teachers and classmates ($M = 3.81$) was rated highly, indicating that the platform facilitates communication and collaboration. This is particularly important in online learning environments, where maintaining interaction is essential for sustaining student engagement. According to Heggart and Yoo (2018), effective interaction is a key component of student satisfaction on LMS platforms, as it fosters a sense of community and supports collaborative learning. But the academic productivity indicator ($M = 3.43$, $SD = 0.90$) received the lowest satisfaction score of all indicators measuring students' satisfaction. It is, however, still in the "high" category, indicating that the slightly lower mean score suggests that the use of Google Classroom is not significantly linked to better academic achievement.

Google Classroom enables engagement, but it does not guarantee better academic achievement. achievements are corroborated by the conclusion of Hidayat et al. (2022), who argued that the effectiveness of an e-learning tool depends on its incorporation into instructional activities. One more thing to mention is that having a specific e-learning tool is not enough; the teaching skills required by the process matter.

This finding underscores the importance of integrating pedagogy into online learning. Although Google Classroom is the right platform for learning because it is equipped with everything that is needed for the same, the efficiency of this tool largely hinges on how the tool is being employed by instructors, for example, through poorly structured tasks or failure to provide any form of feedback.

Another important implication of this finding is that student satisfaction is influenced by multiple factors, including: System usability, Interaction quality, Instructional design and Learning environment.

Hence, efforts to enhance satisfaction should focus on applying a holistic approach that considers both technical and pedagogical issues.

In summary, it is evident from the findings that Google Classroom offers a satisfactory and enjoyable learning experience; however, its contribution towards students' academic achievement can be constrained by the mode of instruction employed.

Differences in Acceptability by Profile Variables

Table 3. Differences in Acceptability Differences in Acceptability and Satisfaction of Google Classroom According to Profile Variables

Variable	Acceptability (p-value)	Interpretation	Satisfaction (p-value)	Interpretation
Age	> 0.05	Not Significant	> 0.05	Not Significant
Year Level	0.256	Not Significant	0.256	Not Significant
Course	0.000*	Significant	0.000*	Significant

Table 3 presents the results of an analysis that show no statistically significant difference in acceptance and satisfaction by age or year level ($p > 0.05$). This means that students, irrespective of their demographic backgrounds, have similar perceptions regarding Google Classroom as a learning management system. The lack of significant variation in perceptions indicates that the learning platform offers a consistent experience for users across age groups and year levels.

This uniformity in perception may be explained by the growing use of technology in learners' everyday lives, which, in turn, has led to the emergence of basic digital competencies among students of different ages. In modern education systems, learners are often engaged in various digital activities that can help them fill knowledge gaps across different technologies. Therefore, both young and older students will likely have the skills to work with LMSs, thereby eliminating any gaps in their perceptions of these systems.

This platform characteristic, along with the integration of familiar technologies, may make it more inclusive and enable diverse groups of learners to use the system effectively. Hence, the results confirm the idea that the Google Classroom platform can be considered an inclusive LMS due to its user-friendliness.

Contrary to age and year level, where no significant differences were identified, a significant difference in acceptability and satisfaction with Google Classroom was found by course ($p = 0.000$). Therefore, it is possible to conclude that a student's field of study is critical for evaluating Google Classroom.

Moreover, this result suggests that Google Classroom's design aligns with the principles of user-centered design, which emphasize developing systems that accommodate a wide range of users with varying levels of expertise. Given that the platform is simple and incorporates commonly used technologies in its development, this is most likely the primary reason the platform will remain accessible to all learners regardless of their background. Therefore, this further strengthens the notion that Google Classroom is a universally accessible LMS.

Though the analysis showed that there were no significant differences in the variables of age and year level, significant differences were seen in the variables of acceptance and satisfaction, wherein $p = 0.000$, in relation to the variable of course. It is thus evident that respondents' academic majors are a key determinant of their perceptions of Google Classroom. Unlike demographic variables, which showed uniformity, academic context introduces variability in how the platform is experienced and evaluated.

The noted differences can be attributed to variations in the demands of the particular courses, the nature of the subject matter, and technological requirements. Courses vary greatly in their design and in the learning strategies used to teach and assess learners' progress. For example, those who focus on conceptual understanding and take a theoretical approach, such as in the social sciences or humanities, would benefit greatly from Google Classroom, which facilitates discussion and writing tasks. However, those requiring practical demonstrations, labs, and other hands-on activities might not be well suited to online platforms, which can lead to lower satisfaction.

In addition, the extent to which technology is embedded in the curriculum could differ among various subjects. Some courses use technology in their teaching methods; therefore, students enrolled in these courses would find it easier to adapt to Google Classroom. The use of Google Classroom by students enrolled in these subjects would be an expansion of what they have been accustomed to, making it more acceptable and satisfactory for them. In contrast, there may be subjects in which students lack experience with technology in learning; hence, they may find it difficult to adapt to Google Classroom.

This finding is consistent with the study of Jakkaew and Hemrungrote (2017), which emphasized that students' acceptance of learning technologies is influenced by their academic background and prior technological exposure. It is shown that knowledge of digital tools influences how students think about them. This implies that variations in discipline-related approaches can affect the degree of technology adoption. In the same way, Setiawan et al. (2021) claim that the success of Google Classroom is heavily influenced by the way it is used in practice. The researchers emphasize that the success of the online classroom depends not only on what the tool offers but also on how it is used.

Moreover, large differences across courses could be attributed to teachers' use of different educational techniques. Teachers use diverse approaches depending on their subjects, which can affect students' interactions with the LMS systems they use. The use of interactive lessons and media in classes can positively impact students' satisfaction levels. However, courses based on one-sided learning can fail to leverage Google Classroom's features, resulting in poor student experiences.

Thus, the results underscore the necessity of discipline-sensitive implementation of LMS (learning management systems) wherein instructional methods are adapted to the specific needs of individual academic programs. A standardized LMS model may not meet the needs of different disciplines. Ultimately, educators would do better to determine which parts of the platform can be tailored to align with their course's specific strengths. This might include adding interactive tools, creating fun and immersive activities, or offering timely, personal feedback to the learner.

Other implications of this research include the importance of having an institution to facilitate effective LMS use. Educators must be trained to develop courses that make

the best use of Google Classroom. By equipping instructors with the necessary skills and knowledge, institutions can ensure that the platform is used effectively across different disciplines, thereby reducing disparities in student perceptions.

Furthermore, the findings suggest that improving acceptability and satisfaction requires a holistic approach that considers both technological and pedagogical factors. While Google Classroom provides a robust platform for online learning, its effectiveness ultimately depends on how it is utilized within the educational context. Addressing discipline-specific challenges and enhancing instructional practices can contribute to more positive student experiences.

These results indicate greater consistency in the features offered by Google Classroom across all demographic variables under study, while stark differences remain between disciplines. This underscores the need for institutions to consider contextual factors as they roll out their LMS. Higher satisfaction and acceptability could be achieved if they are responsive to the disciplines and focus on these specific requirements.

Relationship Between Acceptability and Satisfaction

Table 4. Pearson Correlation Between Acceptability and Satisfaction

Variables	r	p-value	Interpretation
Acceptability ↔ Satisfaction	0.412	< 0.001*	Significant (Moderate Positive)

According to the results of the correlation analysis shown in Table 4 above, there is a moderately strong, positive correlation between acceptability and satisfaction ($r = 0.412$, $p < 0.001$). In essence, the results imply that students who view Google Classroom as beneficial, user-friendly, and accessible tend to be more satisfied with their learning process. The significance of the p-value implies that the correlation between the two variables is not coincidental but rather empirical.

The strength of the correlation indicates that acceptability significantly influences students' satisfaction, though it does not act alone. Instead, it acts as one of many interconnected variables that affect how students perceive and evaluate Google Classroom as an LMS. This is a crucial point because it underscores the fact that while making the system user-friendly will increase students' satisfaction, such action alone cannot solve all problems related to their learning process.

Theoretical analysis shows that the results strongly support the Theory of Technology Acceptance, which posits that perceived usefulness and perceived ease of use of technology significantly influence users' attitude towards the system and the behavior associated with it (Jakkaew & Hemrungrote, 2017). In the current research, acceptability encompasses two major TAM concepts, whereas satisfaction results from users' interaction with technology. The positive association between these factors shows that perceiving Google Classroom as useful and easy contributes to positive attitudes towards it and, thus, to greater satisfaction.

However, given the rather weak correlation coefficient ($r = 0.412$), the acceptability variable cannot be treated as the sole factor responsible for the effect on satisfaction. The presence of additional factors affecting students' experience underscores that the use of LMS is a multifactorial concept. Although TAM is rather efficient as a conceptual framework for understanding the dynamics of technology use, other factors may still affect users' levels of satisfaction.

The findings are consistent with those of Heggart & Yoo (2018), who stressed that student satisfaction in an LMS context depends not only on technology factors but also on pedagogical factors such as interaction quality, feedback, and instructional design. According to the authors' findings, even advanced systems can fail to achieve high satisfaction scores if no adequate teaching methods are used. The presented point of view aligns with current research, which has established acceptance as a factor in satisfaction.

One key implication of this observation is that being merely usable is not enough to guarantee good experiences for learners. Although Google Classroom might be very user-friendly and efficient, satisfaction levels can be affected by how the tool is implemented in the teaching process. For example, having good instructions, appropriate feedback, and interesting assignments will make the experience more enjoyable irrespective of the platform itself. On the contrary, bad teaching practices can limit its potential impact even if the tool itself is highly acceptable for the users.

Moreover, since the correlation is moderate, the quality of interaction is an important factor in determining satisfaction. The online environment does not provide immediate and rich interaction; therefore, it is important to develop interaction among students through different activities. Google Classroom has provided ways of communication and interaction. However, the way tools are used influences interaction effectiveness and determines satisfaction levels.

Another aspect that could contribute to student satisfaction is the context of the learning experience, which could be the learning environment within which the technology is deployed. Google Classroom is not just experienced through its interface; rather, students' use and experience of it depend on the context outside the system, including internet access and device availability, among others. In contexts where technological resources are limited, students may experience frustration and difficulty, which can reduce satisfaction even if the platform is perceived as useful.

Moreover, the motivation of the students is critical in measuring their satisfaction levels. The students who have an interest in gaining new knowledge will feel motivated to engage with the portal, experiment with its features, and participate in learning activities. Such behavior will lead to higher satisfaction levels. In contrast, the students who are not adequately motivated may end up not using the portal to its full potential, resulting in lower satisfaction levels.

The findings also highlight the importance of instructional alignment, where the design of learning activities is aligned with the capabilities of the LMS. Google Classroom provides several features that can accommodate diverse instructional techniques, but they have to be applied efficiently for better learning results. For instance, including multimedia materials, interactive tasks, and assessment measures may increase the degree of engagement on the part of students. Proper alignment between instructional techniques and capabilities of the application may contribute to the higher utility and satisfaction level of users.

In addition to this, the medium connection between acceptability and satisfaction highlights the importance of adopting a holistic perspective towards the introduction of an LMS. Instead of limiting attention only to technical aspects and trying to improve the system per se, it is important to look at the whole educational environment where the tool will be utilized. This means making sure that instructors receive appropriate training, technological capabilities are available to students, and proper educational policies exist.

Yet another inference that can be drawn from the results is the requirement for ongoing assessment and enhancement of LMS adoption. With changes in technology and learning processes, it is essential to continually evaluate students' opinions to find ways for improving the system. Student feedback will help determine the advantages and disadvantages of the system and make decisions on its implementation.

These findings further show that acceptability is an important predictor of user satisfaction, though it does not stand alone. The modestly positive correlation shows that apart from being usability and useful, there are other aspects that are important as well such as instructional design, interaction design, the learning context, and learner motivation. These findings underscore the importance of a holistic approach toward the use of LMS.

Finally, the findings show that the success of Google Classroom as an LMS lies in the interdependence of many factors. Understanding the intricacies of such interactions allows teachers and organizations to adopt a broader approach towards the improvement of online classes. Improving the efficiency of teaching and overcoming certain barriers related to the context, as well as working with the tool itself, is important.

CONCLUSION

It can be concluded from this study that Google Classroom was considered a highly acceptable and satisfactory LMS among higher education students amid the coronavirus outbreak. The platform was regarded by the learners as useful, user-friendly, and effective in fulfilling their learning needs. The results obtained have confirmed the appropriateness of applying the Technology Acceptance Model when it comes to predicting the learners' acceptance of technology-assisted learning platforms.

Nevertheless, there were several obstacles to the effective use of Google Classroom identified within this research study, especially in terms of its accessibility. While the level of acceptance remains at a very high level, lack of Internet and inability to use some of the devices due to various technical reasons remain an obstacle in the process of effective LMS use.

Moreover, even in case of high learners' satisfaction, the improvement of academic achievements cannot always be expected. It means that appropriate instructional design becomes one of the key factors in improving learners' academic achievements. Differences observed across academic programs indicate that LMS implementation should be tailored to the specific needs of different disciplines. A one-size-fits-all approach may not be effective in addressing the diverse requirements of various fields of study.

Improving the effectiveness of Google Classroom requires a comprehensive approach that includes enhancing digital infrastructure, improving instructional practices, and adopting discipline-specific strategies. By addressing these factors, institutions can create a more inclusive and effective online learning environment that supports student success.

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INTEGRATING ICT INTERVENTIONS TO REDUCE STUDENTS' DIFFICULTIES IN USING GOOGLE CLASSROOM IN HIGHER EDUCATION

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ABSTRACT The shift towards e-learning amid the coronavirus disease pandemic revealed considerable problems with students' use of the digital platform for learning, especially Google Classroom. This study assessed the impact of an organizational intervention program, called "Let's Talk ICTO," on students' use of Google Classroom. The study was based on Goal-Setting Theory and models on technology adoption, wherein a pretest-posttest descriptive action research design was used with 357 respondents chosen via stratified random sampling. It was established that the difficulty levels reported by the students at the beginning were exceptionally high ($M = 4.46$), but significantly reduced after the intervention ($M = 3.65$) ($p < .05$). From the findings, it can be observed that the intervention successfully reduced the level of difficulty among the students especially with regard to technology usage, internet connection, and navigating the system. The findings indicate a need for structured ICT support to help students better utilize LMSs. The study recommends strengthening ICT training programs, integrating digital orientation in academic courses, and improving institutional support systems to enhance online learning experiences.

Keywords: Google Classroom, ICT intervention, student difficulty, online learning, action research

INTRODUCTION

The coronavirus (COVID) outbreak accelerated the transformation of the educational world, forcing universities to move from conventional, physical learning to entirely digital, flexible learning. The sudden transition required an instant response to ensure continued learning even amidst numerous disturbances. This led to the adoption of Learning Management Systems (LMS), which played a crucial role in delivering lessons, assigning homework, and communicating with learners. Among the many Learning Management Systems, Google Classroom has proven to be among the most popular due to its convenience and compatibility with multiple digital applications (Iftakhar, 2016).

A change of this sort reflects a broader move towards integrating ICTs in higher education, which is known to be crucial for improving access, flexibility, and continuity of learning during emergencies such as the coronavirus pandemic. However, research has shown that for the integration of ICTs to be successful, it is not enough to simply have access to ICTs; rather, it should be a holistic process that includes several elements to enable learners to benefit from the process (Tatnall, 2020; Patra et al., 2021). Without them, the advantages of using digital platforms can be overlooked, posing challenges for learners when using such platforms.

The adoption of e-learning environments presented extra hurdles from an educational point of view. Whereas normal classroom environments demand little effort from students,

e-learning demands more autonomy and computer skills from learners. Learners need to possess skills to work digitally, work independently, and engage with digital resources. While Google Classroom helps learners achieve these goals with its advanced features for organizing, collaborating, and communicating, the success of this approach depends entirely on the learner's proficiency in using the application. As noted in the research literature, the incorporation of ICT into education does not mean merely embracing technology as such but also involves pedagogy (Tatnall, 2020; Patra et al., 2021).

The Technology Acceptance Model (TAM) can serve as a theoretical framework for understanding students' interactions with digital media. According to TAM, two factors play a significant role in technology acceptance: perceived usefulness and ease of use. If students find the system useful and easy to use, they will use it appropriately (Jakkaew & Hemrungrote, 2017). However, factors such as poor digital literacy, unstable internet connections, and a lack of supportive environments can hinder a positive perception of the technology. Consequently, students' involvement decreases, and they face difficulties.

Not only is TAM essential in promoting learning in technological settings, but other theories like constructivism and design-based learning also emphasize active participation, cooperation, and guided learning. Such theoretical frameworks propose that the effectiveness of learning increases when learners are actively participating in the process as well as when instructional methods are related to real-life applications. According to Seboka et al. (2025), the application of professional development strategies such as design-based professional development not only enhances technological expertise but also fosters learning skills, thus fostering the adoption and usage of ICT.

Even with the benefits that Google Classroom offers, students still face different difficulties when using it. These difficulties include poor internet connections, limited availability of devices, and inadequate digital skills among others. Several studies have shown that these problems hinder students' ability to participate in the online learning platform and attain the expected learning goals (Hassan et al., 2020). Moreover, other contextual factors, such as power outages, limited technical support, and infrastructure constraints, have been identified as contributing to the use of ICT in education (Joshua et al., 2021).

Furthermore, access-based problems are frequently linked with socio-economic issues, resulting in differences in learning experience. Learners from poor communities lack access to the internet and ICT-enabled devices, making them less likely to benefit from online learning. It is an important problem with regard to the implementation of ICTs because, apart from access to technology, it also affects the quality of learners' learning experience (Tatnall, 2020; Patra et al., 2021).

Given these difficulties, the literature indicates the need for targeted intervention measures to boost students' digital competencies and address learning obstacles. Among the most important ones are digital literacy training, technical assistance, use of multimedia materials, and digital tasks relevant to learning objectives (Carreon & Aquino, 2021; Tatnall, 2020). Such measures help improve students' digital skills.

It is important to note that institutional and policy-related factors also matter for the efficiency of integrating ICT into the teaching process. Financial support, infrastructure improvement, and professional development should all be considered, as without them the process would yield no results (Tatnall, 2020; Patra et al., 2021).

Even though the number of publications on ICT integration and the use of Google Classroom has significantly increased in recent years, a lack of scientific evidence for intervention-oriented studies aimed at minimizing the challenges students face persists. In most cases, researchers have focused on technology acceptance and attitudes towards ICT tools. However, less attention is paid to the actual effectiveness of interventions that improve students' competencies.

In view of the foregoing issues, the rationale for conducting the current study is to examine the effectiveness of the intervention program, LetsTalkICTO, in overcoming the obstacles students encounter when using Google Classroom. In particular, the findings that will be generated through this study prior and post-intervention, will reveal the benefits of ICT interventions for improving digital literacy among learners.

Results and Discussion

Level of Difficulty Before the Intervention

Table 1. Level of Difficulty of Students in Using Google Classroom Before the Intervention

Difficulty in accessing internet at home	4.38	0.84	Very High
Inability to afford internet subscription	4.36	0.82	Very High
Poor upload/download condition	4.39	0.86	Very High
Difficulty asking teachers for clarification	4.56	0.88	Very High
Knowledge limitation in using Google Classroom	4.73	0.79	Very High
Internet restrictions	4.63	0.83	Very High
Difficulty using Google Classroom system	4.31	0.87	Very High
Lack of computer skills	4.27	0.85	Very High
No skills in using Google Classroom	4.51	0.84	Very High
Difficulty submitting assignments	4.49	0.86	Very High
Overall Mean	4.46	0.83	Very High

Results show that the respondents had to face extremely high levels of difficulty before the intervention, suggesting that switching to online studies has been quite difficult for them. This is consistent with a number of problems that occur during the process of ICT adoption when there are not enough facilities, digital skills, and organizational capacity to facilitate the change (Tatnall, 2020; Patra et al., 2021). The level of difficulty suggests that the students have faced many obstacles in their learning process.

From a system perspective, the use of ICTs in education is a multi-level process that entails developing technological infrastructure, human capabilities, organizational policies, and pedagogical approaches. However, when one of these elements is missing, then the implementation of ICTs cannot be effective. In the current case, the extremely high degree of difficulty arises due to such an inconsistency in the interrelation between the aforementioned elements, especially with regard to students' capabilities and infrastructural readiness. As ICT integration studies point out, digital transformation is impossible without combining all these elements, which does not seem to have been achieved in the given case (Tatnall, 2020).

Knowledge Limitation was rated to be difficult among the many factors involved. These results suggest that learners did not have the competencies needed to navigate Google Classroom. Research suggests that digital literacy is one of the main prerequisites for ICT integration. Learners without the know-how when it comes to technology will experience challenges that may affect their learning process (Jakkaew & Hemrungrote, 2017). Digital literacy is not only about knowing how to operate a computer but also encompasses more complex skills, including the management of information, problem-solving, and adapting to changes in technology.

Furthermore, poor digital literacy may have been an additional factor contributing to increased cognitive load on students. The cognitive load theory proposes that learners have a limited processing capacity, and that when this limit is exceeded, learning becomes less efficient. In e-learning, when students are not familiar with the digital platform, they need to use their cognitive energy to understand how to navigate the interface, leaving less time for studying the actual content.

Apart from skills-related problems, infrastructural issues such as internet access and the availability of gadgets were major sources of difficulty for students. This result is similar to previous research that found that problems relating to access continue to be an important barrier to ICT-based education, especially in developing countries (Tatnall, 2020). This suggests that technological and socio-economic factors need to be considered when implementing ICTs into schools. If students do not have access to gadgets and internet connectivity, they will not be able to engage in learning activities through ICTs.

Furthermore, one has to consider connectivity, as most online learning tools rely heavily on Internet availability for interaction. The lack of connectivity will affect the entire learning process as well as the submission of assignments and use of resources for learning. This may further increase the financial burden on poor students.

Further, the problem in communicating lies in the design of the online learning environment itself. Good communication is key in engaging students and making them understand the lessons; however, online learning platforms do not provide immediate feedback and interaction that is present in traditional classrooms (Heggart & Yoo, 2018). This implies a change in pedagogical approach to ensure successful communication in an online setting. Without interaction, students will have trouble clarifying doubts and asking questions, leading to a poor understanding of the lesson.

Another important implication that stems from this finding is the importance of social presence in e-learning. Social presence refers to the extent of connection that an individual has with others in the learning setting. Where social presence is minimal, learners will be lonely and lack motivation to learn, thus hindering the learning process. The unwillingness by the students to approach teachers to get explanations on some of the issues shows the absence of social presence in the online learning environment.

Additionally, the common high difficulty across all indicators indicates that these difficulties were systemic rather than personal. This implies that these difficulties did not affect individual students or particular instances but rather affected the entire sample of participants. In such situations, a systemic response is needed to address these difficulties.

The results from the intervention demonstrate the complex issues associated with students having trouble with Google Classroom. The issues arise from a complex set of problems related to their digital skills, infrastructure, and lack of communication, among other factors. Solving this problem calls for an all-encompassing strategy.

2. Level of Difficulty After the Intervention

Table 2. Level of Difficulty of Students in Using Google Classroom After the Intervention

Difficulty in accessing internet at home	4.17	0.83	High
Inability to afford internet subscription	3.91	0.76	High
Poor upload/download condition	4.12	0.85	High
Difficulty asking teachers for clarification	3.43	0.98	High
Knowledge limitation in using Google Classroom	3.35	0.93	Moderate
Internet restrictions	3.61	0.92	High
Difficulty using Google Classroom system	3.40	0.92	Moderate
Lack of computer skills	3.31	0.99	Moderate
No skills in using Google Classroom	3.34	1.00	Moderate
Difficulty submitting assignments	3.83	0.96	High
Overall Mean	3.60	0.59	High

The drop in difficulty levels post-intervention is indicative of the success of the structured support through ICT in enhancing learners' abilities. The change from "very high" to "moderate" difficulty across most indicators suggests that students improved at maneuvering within the system.

This improvement in students' ability can be attributed to the structured approach, which may have included clear directions for practice and feedback. This is important because skill acquisition requires an environment where students can gain mastery incrementally. The structured approach also helped minimize difficulties faced by the students in the process.

This is a development consistent with studies indicating that training is key to enhancing digital literacy and ICT usage (Carreon & Aquino, 2021). Practical training is often more successful in helping learners acquire competence in digital media because they incorporate immediate feedback from the learners' participation in practical tasks.

Theory-wise, the change is based on constructivist theories of learning, which emphasize active involvement in the learning process. Involvement in the learning process will help students gain better insights about the subject matter and also enable effective application of their knowledge base. Through this exercise, it appears that the environment set up was conducive for learning experiences. Nonetheless, issues related to the internet suggest that there are still infrastructural barriers. Although training helps increase users' competencies, it does not address other aspects, such as access and resources (Tatnall, 2020; Patra et al., 2021).

These issues further emphasize the role of institutions in integrating ICTs. Institutions need to ensure they offer training, as well as the infrastructure and other resources necessary for success. Failure to do so means that the ICT intervention will lack significant benefits for the learners because of some barriers they encounter.

Furthermore, the variations in their answers show the different effects that the intervention program had on them. This must be due to differences in their prior knowledge, learning styles, and available resources. Differences like these show the importance of an intervention program that is flexible enough to change as per requirements.

In summary, results obtained after the intervention suggest that structured ICT assistance has the potential to greatly enhance learners' capabilities and overcome problems encountered. Nevertheless, the problems that still exist demonstrate that much more work is required to address underlying infrastructure issues.

3 Difference Before and After Intervention

Table 3. Difference in Students' Level of Difficulty Before and After the Intervention

Difficulty Level	4.46	3.65	0.81	<0.05	Significant
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This dramatic decrease in difficulty shows the efficiency of the implemented approach. This result is consistent with theoretical models such as Goal Setting Theory, which emphasizes the provision of guidance and feedback to increase performance. As a result of the intervention, students were able to gain skills and competence for working in Google Classroom because of the guidance provided. It is possible that the structured nature of the intervention helped provide students with clear expectations, appropriate tasks, and necessary feedback. Thus, all important elements that increase performance can be found in the approach used.

However, the observed progress was attributed not only to enhanced proficiency in technical skills but also due to high self-confidence and low mental stress. Since the users had become adept at the use of the system, they were able to complete many functions with much ease, and hence made them easy. This corresponds with the principle that the repetition of an action enhances competency by practice. Digital technology, when used continuously, allows users to get to a point where certain tasks are performed automatically.

This conclusion is backed by research showing that digital literacy and proficiency of technology rise substantially after the students undergo systematic training and practice sessions (Jakkaew & Hemrungrote, 2017). Likewise, investigations into the use of ICTs in the teaching process have shown that educational initiatives aimed at fostering digital capabilities help boost learning because the students are better able to explore and understand digital information and technologies (Tatnall, 2020). In addition, technology-supported learning settings enable learners to be more engaged, motivated, and communicative.

The findings of this study further conform to the adoption of the technology theory that postulates that increased levels of usability and usefulness would facilitate higher levels of interaction. As the learners were exposed to the technology, the perceived ease of use and usefulness improved; hence, their academic performance. The acceptance of the technology model suggests that people are likely to adopt and use technology if they see it as easy and useful.

In addition, the improvement observed in this case study is supported by the literature on digital learning platforms, which shows a marked improvement in students' performance and digital literacy as a result of being introduced to well-designed ICT-based programs. For example, the literature has established that Google Classroom can be effective only if users receive sufficient training and support, leading to better academic performance and fewer difficulties with task completion.

Another important aspect of the observed improvement is the development of students' self-efficacy. Self-efficacy refers to individuals' belief in their ability to perform specific tasks. As students gained experience and successfully completed tasks using Google Classroom, their confidence likely increased, leading to a more positive learning experience. This increase in self-efficacy is critical, as it influences students' motivation, persistence, and overall engagement in learning activities.

Although the intervention had been quite successful in decreasing difficulties, it should be noted that they were not completely overcome. There remained some difficulties, especially those connected with external factors, for example, internet connection problems and resource availability. It implies that although any interventions could help overcome internal obstacles to the use of ICT by teachers, they would hardly be able to cope with the problem of external obstacles. The above-mentioned conclusion highlights the necessity to adopt a holistic approach towards the implementation of ICT in education.

In addition, the results highlight the importance of sustained, continuous intervention efforts. Digital literacy is not a one-time achievement but an ongoing process that requires continuous learning and adaptation. As technology evolves, students must continually update their skills and knowledge to remain effective users of digital platforms. Therefore, interventions should not be viewed as isolated initiatives but as part of a broader strategy for developing digital competencies.

In conclusion, the substantial drop in level of difficulty is an indication that ICT-based strategies are successful in developing learners' capabilities and making the experience more enjoyable for them. These results offer evidence for theory and stress the significance of incorporating technological and pedagogical aspects for success in e-learning.

4. Differences in Students' Difficulty by Profile Variables

Table 4. Differences in Students' Difficulty by Profile Variables

Sex	U = 3015.5	0.845	Not Significant
Year Level	H = 15.62	0.001	Significant
Course	H = 41.24	0.000	Significant

The absence of gender differences suggests that ICT challenges are not influenced by demographic factors but are instead related to access, experience, and training. This finding reinforces the idea that digital inequality is more closely associated with socio-economic and contextual factors than with inherent demographic characteristics. In many educational contexts, disparities in digital access and skills are often linked to differences in resources, exposure, and support systems rather than gender.

This observation is supported by existing studies on the integration of ICTs, which point out that the limitations that affect the adoption of technology are more structural and contextual than demographic (Tatnall, 2020). As an example, the presence of stable internet access, availability of hardware, and experience with digital technologies play important roles in determining whether learners can effectively interact with virtual learning sites. Once these variables are accounted for, gender-based disparities become less pronounced, implying that there is no significant difference in the ability of male and female students to adjust to virtual education settings.

The significant differences across year level and course highlight the importance of context in shaping students' experiences. Students in higher year levels may have greater exposure to technology, resulting in lower levels of difficulty. This can be attributed to their increased experience with academic tasks, familiarity with digital tools, and ability to adapt to new learning environments. As students progress through their academic programs, they are more likely to encounter opportunities to use technology, which enhances their digital competencies.

In the same way, variations among courses are a result of how courses have been designed and how much technology has been used in the process of teaching. Courses which make use of technology tend to give birth to students with high digital literacy skills whereas those courses which do not make much use of technology might not be able to provide such opportunities.

These findings are supported by research indicating that exposure to technology and learning environments significantly influences students' digital competencies. Studies have shown that learners who frequently use digital tools and engage in technology-mediated learning activities demonstrate higher levels of proficiency and confidence (Jakkaew & Hemrungrote, 2017). Additionally, disparities in digital skills have been linked to differences in socio-economic background, educational opportunities, and institutional support systems .

The differences that have been noted further emphasize the necessity of designing appropriate ICT-based solutions for each individual group of learners. A single approach cannot prove successful in dealing with all the different problems that various learners face, and therefore it is important to take into account several aspects, including the level of students' knowledge and other learning demands.

Furthermore, the findings underscore the role of institutional support in addressing disparities in digital competencies. Institutions must provide targeted support for students who may be at a disadvantage, such as those in lower year levels or courses with limited technology integration. This may include providing access to resources, offering training programs, and implementing policies that promote digital inclusion.

A critical implication of this study would be the integration of digital literacy into the curriculum. Instead of considering digital literacy as something extra, it should be incorporated into the curriculum to make sure that students can develop these skills. In addition to improving their digital literacy skills, such an approach will prepare students for the challenges of the digital economy.

In conclusion, the profile variable analysis reveals the significance of context in determining how ICT affects students. These results indicate that tackling digital inequality requires a holistic strategy considering various determinants.

5. Effect Size of the Intervention

Table 5. Effect Size of the Intervention

Difficulty Level	4.46	3.65	0.81	0.88	Large Effect
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The large effect size confirms that the intervention had a substantial impact on reducing students' difficulties. This highlights the importance of structured ICT interventions in improving digital competencies and learning outcomes. Unlike statistical significance, which indicates whether an effect exists, effect size provides insight into the magnitude of the impact. In this case, the large effect size suggests that the intervention produced meaningful and practically significant improvements in students' ability to use Google Classroom.

The reason for the effectiveness of this intervention was because of its design, which probably involved features such as having a clear objective, guidance in teaching, and practice opportunities. All these features are fundamental to effective learning since they guide learners on how to use the knowledge gained during the process. The effectiveness of the intervention indicates that when certain measures are put in place, learner competence can be greatly enhanced.

This finding is consistent with research indicating that structured ICT interventions lead to significant improvements in digital literacy and learning outcomes. Studies have shown that training programs and technology-supported learning environments enhance

students' engagement, motivation, and performance by providing them with the necessary skills and resources . Additionally, digital literacy training has been found to produce significant gains in participants' competencies, as evidenced by improvements in pre-test and post-test scores.

Moreover, the substantial effect size indicates that the intervention was effective in overcoming some of the significant barriers associated with using technology in the process of education, especially barriers associated with low levels of digital literacy and difficulties in understanding how to navigate the system. In doing so, the students were relieved of the burden associated with using Google Classroom, thus allowing them to focus more on their studies.

However, the persistence of certain challenges indicates that interventions must be complemented by broader institutional and infrastructural support. While the intervention was effective in improving students' competencies, it may not have fully addressed external factors, such as internet connectivity and device access. This highlights the need for a holistic approach that integrates training, infrastructure, and policy development.

In addition, the results underscore the significance of sustainability for ICT projects. Though immediate gains should be appreciated, sustained gains require sustained efforts. The institutions need to provide sustained access to learning opportunities, training, and other resources in order to allow students to sustain and improve their ICT competencies.

The large effect size also has implications for policy and practice. It provides empirical evidence supporting the effectiveness of ICT-based interventions, which can inform decision-making at the institutional and policy levels. By demonstrating the impact of structured interventions, the study highlights the potential of ICT integration to enhance learning outcomes and reduce educational inequalities.

In addition, the results indicate that there is potential for substantial gains from investments in ICT interventions, both in terms of enhanced student achievement and participation. This highlights the need for the provision of resources to facilitate digital learning programs and enable students to develop the necessary competencies for effective online learning.

CONCLUSION

This study concludes that ICT-based interventions are highly effective in reducing students' difficulties in using Google Classroom, as evidenced by the significant decrease in difficulty levels and the large effect size ($d = 0.88$). The findings indicate that structured training programs significantly enhance students' digital competencies, particularly in system navigation and technological skills.

Nevertheless, constant problems concerning internet connection make it clear that there should be an effort on the part of institutions to invest in ICT to guarantee equal access to e-learning for everyone. Moreover, it is evident from the results of the study that students face different challenges depending on their course and academic year.

Overall, the study underscores the critical role of continuous ICT support, digital literacy training, and institutional commitment in improving online learning experiences. These findings provide valuable implications for policy development, curriculum design, and instructional practices in higher education.

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ENHANCING PRE-SERVICE TEACHER COMPETENCE: AN ASSESSMENT OF INSTRUCTIONAL COMPETENCIES OF BACHELOR OF ELEMENTARY EDUCATION STUDENT INTERNS

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ABSTRACT This study assessed the instructional competencies of Bachelor of Elementary Education (BEEd) student interns as evaluated by their cooperating teachers in the Schools Division of Guimaras during the second semester of the academic year 2018–2019. Specifically, it examined the level of instructional competence across six domains—planning and preparation, teaching skills, evaluation skills, classroom management, language proficiency, and intellectual skills—identified strengths and weaknesses, and proposed a training program to enhance identified competency gaps. Descriptive design was used, using a questionnaire that is consistent with the competency-based teacher education criteria. The subjects were the cooperating teachers, who had direct supervision over the intern teachers in their practicum period. Mean and standard deviation were used for data analysis. The results showed that the student-interns exhibited a very satisfactory degree of instructional competence, ready for professional teaching. In particular, evaluation skills and classroom management were found to be among the areas of highest performance by the intern-teachers, implying their capability to evaluate the academic achievement of students and manage the classroom properly. In addition, planning and preparation and language proficiency were also considered high areas of competency, meaning competence in lesson preparations and language communication skills. On the other hand, teaching skills and intellectual skills were relatively weak areas. From the results, it can be concluded that although there have been considerable efforts by educational institutions towards developing basic competencies among pre-service teachers through their training programs, it is still necessary to develop strategies aimed at building high-level instructional capabilities. Consequently, a systematic training program that emphasizes learner-centered methods, reflection, differentiation, and formative assessment has been recommended based on the findings of the research. These research findings are important in enhancing the quality of teacher education programs through improved mentorship and constant professional training of instructors.

Keywords: instructional competence, pre-service teachers, practicum, teacher education, competency-based education

INTRODUCTION

Instructional competence can be regarded as one of the key aspects influencing the success rate of any education system as instructors become the main factors of learners' knowledge transmission, facilitation, and transformation. It is important to stress that instructional competence involves knowledge, skills, behavior, dispositions, and understanding associated with teaching. There have been numerous studies emphasizing that instructional practices and interactions with learners by teachers substantially impact on quality of learning and learners' performance (Doyle, 2006). Good instructions with clear explanations, feedbacks and structured activities increase the probability that learners will be able to perform academic activities successfully. Therefore, the development of instructional competence is crucial for educational practice and reforms.

With the changing times of the 21st century, there is an increased emphasis on competency in teachers. In this regard, the TEI must ensure that the preservice teachers receive training and education in such a way that they have developed all necessary competencies to be effective in classrooms. This means that the TEIs should not only teach pre-service teachers the concepts and ideas but also prepare them to be able to use this information in their actual classrooms.

Competency-Based Teacher Education (CBTE) constitutes an integrative model of instruction and competencies. According to CBTE, instructional competence is understood through the development of knowledge, skills, abilities, and attitudes in terms of content competence, pedagogy, classroom management, assessment, and professionalism (Aykaç & Şahin, 2018; Carstensen & Klusmann, 2020). Unlike other models of teacher education, CBTE pays special attention to performance-based learning outcomes, meaning that pre-service teachers are assessed according to their demonstrated competencies in the course of instruction. In line with international trends in teacher education, CBTE reflects current standards of competency-oriented teaching.

For the Philippines, teacher education programs are underpinned by the policies of the Commission on Higher Education (CHED), as well as by outcomes-based education policies that focus on competency development and alignment to licensing requirements. Such policies place great importance on the role of practicum or internship as an essential part of teacher education. Practicums allow students who are interning to apply theoretical concepts to actual situations in classrooms so that they can develop both skills and dispositions (Rudio et al., 2020; Aykaç & Şahin, 2018).

The literature consistently highlights the fact that practicum is the capstone experience of teacher training. It is during this period that pre-service teachers are introduced to real-life experiences in class such as dealing with diverse students, classroom management issues, and instructional decisions. According to Faisal and Martin (2019) as well as Hernández (2021), practicum is important for the development of instructional skills through supervision, feedback, and reflection. In addition, practicum plays an important part in professional identity formation.

Instructional competence has been seen as a multi-faceted entity by several professionals who have written extensively about education and its different facets. Some of the most prevalent factors that are studied in the framework of instructional competence are lesson planning, teaching skills, classroom management, evaluation skills, language skills, and intellectual skills. Lesson planning can be defined as the skill of designing lessons according to educational goals. Teaching skills comprise teaching and motivating learners to learn effectively. Classroom management is concerned with making sure there is an ideal environment in which children learn. Evaluation skills enable educators to appraise the learning levels of children and give feedback.

Various empirical studies have shown that instructors with high levels of instructional competence are more inclined to boost their students' involvement and academic performance. Good class interaction, diversity in teaching approaches, and feedback provision make substantial contributions towards the improvement of learning experiences (Doyle, 2006). In addition, there is evidence to show that instructional competence is correlated with other aspects of the education process, including learner motivation, cognition, and classroom engagement. Nevertheless, some researches have found out that instructional competence does not sufficiently account for student engagement, suggesting that there are other factors to consider.

In spite of the great deal of importance placed upon the development of competencies, there are numerous issues that make it difficult to ensure that pre-service teachers obtain the necessary level of instructional competence. Differences in practicum experiences, supervision, mentorship, and support provided by universities have the potential to impact significantly the development of competencies among student teachers. As emphasized by various sources, one of the critical factors contributing to effective practicum is high-quality supervision and constructive feedback systems (Carstensen & Klusmann, 2020).

Furthermore, there exist persistent research gaps concerning the thorough evaluation of instruction skills of pre-service teachers. While there is a myriad of research dealing with particular skills like teaching methods and class management, little is known about instructional competency viewed holistically. Moreover, there is insufficient scientific information connecting competency acquired during practicum to its successful implementation later in the field. Finally, as discussed above, there exists a necessity of creating an objective and reliable way of measuring instructional competency.

Moreover, another important aspect where gaps exist is the context-specificity of instructional competence. Research studies tend to be done in foreign environments which may not necessarily reflect the situation in the Philippines. The existence of constraints like limited resources, diversity in the classroom, and support from the institution may impact the attainment of competencies. Thus, what is needed is an examination of competencies in student interns within a particular context.

In response to the identified gaps in the literature and the need for localized empirical evidence, this study was conducted to assess the instructional competencies of Bachelor of Elementary Education (BEEd) student interns as evaluated by their cooperating or critic teachers in the Schools Division of Guimaras during the second semester of the academic year 2018–2019. Teaching competence, including planning, teaching, classroom management, and assessment, is considered an essential element that influences teachers' performances and students' academic achievements. Although instructional competences play a crucial role in determining effective teaching practices, previous investigations have paid attention to individual areas without making an assessment of competences according to their specific domains. In addition, different implementations and supervisions of practice call for an analysis of competences in practice.

Specifically, this study sought to determine the level of instructional competencies of BEEd student interns across key domains, namely planning and preparation skills, teaching skills, evaluation skills, management skills, language proficiency, and intellectual skills.

These domains represent the core components of effective teaching and are essential for ensuring quality instruction in diverse classroom settings. Moreover, another objective of the research was to find out the strengths and weaknesses of student teachers according to their respective cooperating teachers, knowing very well that such evaluation is an important source of information on the practical use of competencies in actual classrooms. Lastly, it was intended to develop a training program based on the weaknesses observed in the area of instructional competence among student teachers. Through this process, the research will be able to contribute to the constant improvement of teacher education programs.

RESULTS AND DISCUSSIONS

Level Of Instructional Competence

From the study, it is clear that there was a very satisfactory degree of instructional competence among student interns of BEEd ($M = 3.87$). It means that student interns had the core competencies that are necessary to teach effectively and were capable of performing instructional activities in actual classroom situations. According to Carstensen & Klusmann (2020), and Aykaç & Şahin (2018), instructional competencies include knowledge of pedagogy, classroom management skills, assessment literacy, and professional dispositions within the framework of competency-based teacher education (CBTE).

The reason for their high competence is because of the organization involved in practicums. Practicum is seen as the final stage of training for teachers as the theory they learn becomes practice through the teaching process (Faisal & Martin, 2019; Hernández, 2021). In this final stage, the student intern interacts in actual classrooms and thus develops important competences through practice, observation, and feedback. Since the practicum process corresponds to competency standards, the assessment of the student intern is based on how they perform rather than their theoretical knowledge.

The areas rated highest were evaluation skills and management skills ($M = 3.93$). This implies that the student interns have the capacity to evaluate the students' performance and create an orderly learning environment in the class. The area of evaluation skills is rated high due to the ability of the interns to design reliable and valid assessments, monitor the learners' progress, and provide feedback. This finding concurs with previous research on the significance of assessment literacy for effective teaching practice (Zhang & Wang, 2019).

Moreover, the interns' capacity to develop routine, discipline, and a positive classroom atmosphere contributes to the interns' high scores in the management competency area. Management competence is attained mainly via practical experience; therefore, it is one of the competencies gained successfully during practicum (Rudio et al., 2020). The results imply that the interns have attained the capacity to cope with class dynamics, thus being ready to teach effectively.

The ability to plan and prepare ($M = 3.88$) and proficiency in language ($M = 3.87$) are also considered very satisfactory. The two skills are important for good teaching since they help teachers plan their lessons and effectively communicate their ideas. The findings suggest that students are able to organize instruction and use proper language in facilitating learning.

Reasons for higher achievement of planning skills lie in the importance attached to preparing lesson plans in teachers training programs. Intern students have to come up with well-prepared lesson plans, which are then checked by supervisors to make sure that they fit with the learning objectives (Doyle, 2006).

While receiving high ratings for its very satisfactory state, skills related to teaching received the lowest average of 3.77. Such a result may be interpreted as implying that student teachers can experience difficulties while delivering instruction and utilizing different instructional techniques.

This is an observation that aligns with past research suggesting that pre-service teachers frequently find it difficult to cope with dynamic activities in spite of their theoretical competence (Heggart & Yoo, 2018). The skills needed for effective teaching are not easy, since they involve decisions made spontaneously, adaptability, and responding to the needs of the learners.

The results are consistent with CBTE, which focuses on competence through performance-based criteria. The results also fit well with the constructivist theory of teacher education, which stresses the significance of learning from experience as part of the development of competence. Practicum offers an avenue for experiential learning.

Table 1. Instructional Competence of BEEd Student Interns

Domain	Domain	Mean	Interpretation	Rank
Evaluation Skills	Evaluation Skills	3.93	Very Satisfactory	1.5
Management Skills	Management Skills	3.93	Very Satisfactory	1.5
Planning and Preparation Skills	Planning and Preparation Skills	3.88	Very Satisfactory	3
Language Proficiency	Language Proficiency	3.87	Very Satisfactory	4
Intellectual Skills	Intellectual Skills	3.81	Very Satisfactory	5
Teaching Skills	Teaching Skills	3.77	Very Satisfactory	6
Overall Mean	Overall Mean	3.87	Very Satisfactory	—

2. Strengths And Weaknesses Of Instructional Competence

However, the findings from the study showed that although all dimensions of instructional competency received high satisfaction ratings, a differentiation was evident among areas that needed improvement and areas where there was strength. In particular, the evaluation dimension and management dimension were strong dimensions, while the teaching dimension and intellect dimension had low ratings. This finding emphasizes the multi-dimensional nature of instructional competency and the uneven growth of competencies in pre-service teacher training programs.

It must be noted that instructional competence is not an entirely homogenous concept, but rather a heterogeneous compilation of different elements. Based on CBTE, instructional competencies emerge out of interactions among knowledge, skills, and dispositions, which result from training and practicums. The results of this study indicate that the teacher education program is successful in developing basic competencies, but higher-level or performance-based competencies could still use some improvement.

The domain of evaluating was found to be one of the most effective ones ($M = 3.93$). Thus, it can be concluded that students who participate in internships are very skilled in designing, conducting, and analyzing evaluations. It proves that these interns have a solid grasp on evaluation techniques and know how to assess their students.

Strength in this case can be explained by the systematic approach adopted when conducting assessments through teacher education programs. Often assessment competence is taught as one of the competencies for students, who are taught how to develop assessments, conduct evaluations of student products, and keep records of them. This makes the process easier due to the set standards involved in the process. In most cases, the competency-based assessment in teacher education has been shown to involve standardized procedures in line with national and institutional standards.

In addition, assessment competencies are developed due to frequent practice throughout the practicum process. The interns have to construct tests, assignments, and exams for the students, and in this way, they can utilize their theoretical knowledge in practical situations. Such frequent encounters build their self-confidence in their evaluation competencies. Several studies have indicated that practicum experiences greatly help pre-service teachers develop their evaluation competencies (Faisal & Martin, 2019).

From the standpoint of theory, the competency with which interns perform evaluations is linked to CBTE, which requires skills that can be measured and observed. Because these assessments are structured and because their results are clearly known, it is easier for student teachers to prove their competence in this area than in others.

Skills in management were another area that was considered as a key strength ($M = 3.93$). This pertained to the ability of the student interns to keep the class in order, set up a routine, and foster an ideal environment for learning.

Classroom management skills can be developed through practicums when student teachers are immersed in real classroom settings. While theoretical knowledge can be

learned without hands-on experience, classroom management requires practice where the student teacher interacts with the students. This allows him to build strategies that will help ensure discipline and motivation within the classroom. Practicums have been proven to be very important in the development of management skills, as seen in many studies conducted (Rudio et al., 2020; Hernández, 2021).

The high rating in management skills can also be explained by the role of cooperating teachers and mentors. Effective supervision and feedback help student interns refine their classroom management strategies and adapt to diverse learner needs. The literature emphasizes that mentorship and supervision quality significantly influence the development of instructional competencies during practicum .

Additionally, classroom management is frequently viewed as the basic skill set required in the field of teaching because classroom management allows for effective teaching in all other areas. Those teachers who are proficient in managing their classroom can build up an environment conducive to learning. Hence, the outstanding results indicate good preparation for creating positive environments on the part of students.

As a strength of moderate level, planning and preparation skills scored an average of 3.88. This suggests that the students are able to develop lesson plans, select the right teaching materials, and organize teaching activities.

The higher evaluation in this category is due to the fact that lesson planning is a very significant part of the training of future teachers. The student-interns must plan their lessons in great detail, which will be examined by the supervisor. In such a way, they acquire skills of systematic planning of lessons.

There is evidence that planning plays an important role in good teaching practices. Good planning gives the teacher an outline of what will be taught during a lesson and, therefore, ensures that the teacher delivers the material in a logical and systematic way (Doyle, 2006).

Nevertheless, the relatively low score in relation to evaluation and management implies that lesson planning is systematic but at the same time creative. The formulation of lessons, which should address the needs of different learners, can be quite difficult especially for future teachers who have no teaching experience yet.

Communication skills were considered moderately strong as well ($M = 3.87$), meaning that the interns are able to communicate in class successfully. It means that they can choose adequate vocabulary, structure their thoughts, and provide instructions effectively.

Communication is an essential part of being a good teacher as it helps students comprehend and engage in the lesson. From the results, the conclusion can be made that the student teachers have adequate knowledge to communicate effectively.

Acquisition of language proficiency is a result of academic learning and practical teaching experience. In teachers' professional education, there is emphasis on developing

communication skills, either verbally or in writing. Moreover, students undertaking internship during their study period have an opportunity to develop their communication skills through practical teaching experience.

But language proficiency is more than just grammar; it includes adapting to the needs of students when communicating with them. The medium mark indicates that although the interns are proficient enough in language use, there are areas where they can improve on their skills.

The teaching skills domain was found to be the weakest ($M=3.77$), although it scored very high in terms of satisfaction. This finding suggests that intern students may experience difficulties while delivering instructions, especially when using different approaches to teaching, considering diverse students, and developing their cognitive abilities.

The profession of teaching is an art with many components, including knowledge of the content being taught, the methodological approach taken, and classroom management. Teaching differs from planning and evaluation in the sense that it is reactive and interactive.

Low ratings in teaching skills could be attributed to a short period of practicum. Even though there are chances of practicum helping learners acquire new skills, it might not be enough in developing more refined skills. The research shows that teaching competence builds gradually through constant practice and self-reflection (Carstensen & Klusmann, 2020).

Another important aspect is that teaching skills also entail being able to deal with a diversity of students, which could prove to be quite difficult for pre-service teachers. The use of different strategies and techniques, as well as fostering critical thinking among students, are complex skills that require years of experience and knowledge on the part of an educator.

Intellectual abilities ($M=3.81$) were also found to be a relative weakness in domains such as critical, analytical, and creative thinking. This means that the students undergoing internship programs require further training in cognitive skills.

Another relative weakness among the skills is intellectual skills ($M = 3.81$), especially in regards to critical thinking, analytical ability, and creativity. This indicates that interns require more training in higher-order thinking skills.

Intellectual ability development is directly linked with the ability to reflect, solve problems, and think critically. However, such an ability has not received its due place in the traditional teacher training courses.

The studies show that pre-service teachers are usually presented with limited possibilities to engage in critical thinking exercises while they are receiving their education, which means that they will have problems applying their skills when they start working. Moreover, it takes a strong command of the subject matter along with effective teaching skills for a person to use critical thinking in class.

This study also indicates that intellectual skills depend on the effectiveness of the practical sessions. Insufficient time to engage in reflection and inquiry may prevent intellectual skills from developing. As observed in previous studies, reflective and inquiry-based learning is necessary to develop intellectual skills.

The pattern of strengths and weaknesses observed in this study reflects the interaction of several interrelated factors inherent in the development of instructional competence. The nature of the competencies will greatly influence their development since it will be easier to learn, measure, and master structured competencies, such as evaluation and classroom management, compared to unstructured competencies like teaching and intellectual skills. The structured competencies will have set procedures and measurable results, making it easier for pre-service teachers to attain proficiency. However, unstructured competencies like teaching will involve a greater level of mental processes, adaptation, and decisions to achieve proficiency. This is in accordance with the stages of competence model which suggests that mastering a skill requires practice until proficiency is attained.

Secondly, the significance of practicum is highly important in the process of competency formation. Practicum offers great chances to experience practical application of acquired knowledge within classroom environment. Nonetheless, due to insufficient time provided for practicum, it may be rather challenging for students to develop highly advanced competencies. Numerous studies emphasize that competencies are gradually formed under long-term conditions with consistent teaching practice and guidance from experienced mentors.

Third, the emphasis of teacher education training is another contributing factor to the pattern. There has been an inclination towards focusing on competencies that have been proven to be measurable. This may include lesson planning and assessment skills. These are part of the competency-based educational systems, where proficiency in pre-defined goals is valued highly. While it guarantees the acquisition of basic competencies by teachers, it does not necessarily encourage the development of more advanced competencies.

Finally, mentorship and feedback play a crucial role in shaping instructional competence. The quality of the supervision received by cooperating teachers plays an important role in the growth and development of pre-service teachers, especially in such intricate fields as teaching instruction. Feedback and mentoring allow the trainees to enhance their teaching skills and work on the shortcomings. At the same time, the lack of consistency in mentoring or inadequate provision of feedback might negatively impact the acquisition of advanced skills. The literature clearly indicates the importance of systematic and ongoing mentoring for improved performance.

Findings strongly favor Competency-Based Teacher Education (CBTE) as it is based on performance-oriented competencies gained by practice and assessment. Findings also support the constructivist approach to teaching and learning that stresses the importance of experiences and reflection.

3. Proposed Training Program

In this respect, the recommended training program is intended to overcome the noted inadequacies in the development of teaching skills and intellectual skills among student interns from the BEEd course, while at the same time strengthening their current strengths in evaluating and managing classrooms. From the results of the study, it can be inferred that while student interns have a very satisfactory degree of proficiency when it comes to instruction, there is a need for focused training in order to improve their other competencies.

The importance of the training initiative lies in the realization of the gap between basic competencies and higher-level teaching competencies. Whereas the intern students have shown proficiency in areas like evaluation and management, the fact that their scores on teaching and intellectual competencies are comparatively lower implies that they need more assistance with regard to these particular aspects. This is consistent with literature, as there is an understanding that competency in teaching builds gradually and consistently through practice (Carstensen & Klusmann, 2020).

Teachers in training programs are often oriented towards gaining knowledge and skills, which may not necessarily prepare them for the challenging and complex situation of classroom instruction. Pre-service teachers can find it hard to apply learner-centered approaches, motivate different types of students, and develop critical thinking skills among their learners. Research proves that teacher training courses that are based on practice and reflection greatly increase teaching proficiency.

Most teacher education courses emphasize theoretical aspects and techniques, which might not provide sufficient preparation for new teachers in dealing with the challenges of classroom instruction. As a result, future teachers may experience difficulty in implementing learner-oriented approaches, establishing relationships with different kinds of learners, and fostering critical thinking abilities. Studies show that teacher training courses that incorporate practical activities and reflective practice lead to improved teaching effectiveness.

The improvement of the ability to teach using learner-based techniques is one of the key areas of concern in the training program to be developed. In the learner-based approach to teaching, emphasis is placed on engagement, cooperation, and diverse ways of instruction to cater for the requirements of students.

Micro-teaching and workshops have a great significance in terms of training methods. Since micro-teaching is one of the most proven teacher training methods, it enables future teachers to learn and improve teaching techniques through practice and observation. This approach makes teaching easier because it enables teachers to focus on particular aspects of teaching without worrying about everything else. Thus, student-interns may become competent in teaching techniques.

The efficacy of such teaching methods has been proven by studies demonstrating that systematic practice paired with feedback greatly improves the quality of teaching. Training programs that include instructions, demonstrations, practice sessions, and feedback have

proven to be more effective than other models. Thus, the combination of microteaching and workshops seems to offer an all-encompassing training model.

Intellectual skills are yet another important aspect that needs to be incorporated into the training program. Intellectual skills include critical thinking and analysis. These skills are very important for good teaching, because teachers need to analyze the situation within the class and decide how to conduct their lessons accordingly.

Reflection and inquiry are key elements in this particular element of the training program. Reflection helps students to analyze and evaluate their teaching practices to determine areas of strength and weakness in order to plan how to improve in their professional performance.

The inquiry approach, conversely, promotes the ability of student interns to analyze problems. Through analyzing actual problems in the class and finding solutions to them, interns can build their cognitive abilities and improve their comprehension of teaching and learning procedures. Studies have shown that reflective and inquiry-based practices greatly contribute to the development of higher-level thinking abilities in pre-service teachers through practicum experiences.

It is important to remember that the suggested program emphasizes the necessity of differentiation and inclusion within teaching processes, taking into account diverse needs of the students under modern conditions of education. Differentiation means that the curriculum is adjusted to meet specific needs of the learners.

Diverse learners training will enable student teachers to acquire knowledge and skills that will enable them to design and use inclusive instructional techniques for their students. These include using a wide range of teaching styles, grouping of students and culturally responsive pedagogy. Studies show that when a differentiated approach is taken during teacher training, positive results are achieved in terms of learner achievement.

Even though the strength of the evaluation skills was noted, there is going to be training offered regarding assessment integration, especially formative assessment. It will make sure that the students intern not only create assessments but use them for proper learning purposes.

Designing hands-on assessment provides interns with the opportunity to gain hands-on experience in developing assessment measures that deliver feedback. The inclusion of formative assessment techniques will enable teachers to track the progress of learners and make necessary changes to the process. Studies indicate that proper implementation of formative assessment is very beneficial for learners.

An important feature of the suggested training process is that of supervision and feedback procedures. The cooperating teachers and mentors serve an essential function in this case, as they provide useful advice to the intern trainees. Feedback is instrumental in helping the trainee interns recognize their shortcomings.

There are studies that show that continuous mentoring and feedback greatly increase the efficacy of teaching. The teachers who get feedbacks and mentoring on a regular basis have shown more progress in their teaching styles than those who do not.

The suggested training program is based on the theory of goal setting, which stresses the role of goals, feedback, and guidance in enhancing one's performance (Locke, 2018). Through the definition of particular training goals and their outcomes, the program allows intern students to concentrate on specific improvements.

Moreover, the training program is in line with the principles of Competency-Based Teacher Education (CBTE). Performance-based learning and competency building are at the center of CBTE. Through practice, feedback, and reflection, the students acquire competencies that they can use effectively when teaching in the classroom.

Moreover, the program incorporates concepts from the theory of experiential learning, which emphasizes the importance of learning by experience and reflection. Student interns have the opportunity to learn via the process of microteaching, reflective practice, and inquiry-based learning.

CONCLUSIONS

This study is conclusive in proving that student interns under Bachelor of Elementary Education (BEEd) show very satisfactory instructional competencies, meaning that teacher education training has proven itself successful in ensuring that they develop teaching competencies based on competency-based teacher education standards. Competencies in evaluation and classroom management skills are very high, suggesting that student interns have the capacity to assess students' learning outcomes and create a conducive learning atmosphere. This is also evident in the level of planning and preparation, and language proficiency.

The study also demonstrates that teaching abilities and intellectual abilities are still relatively underdeveloped in comparison with other skill sets. Such skills demand high-level mental processes, flexibility, and instant decision-making, which cannot be gained by the students with their restricted experiences in practical work. The analysis shows that although basic skills are already developed in sufficient measure, it is important to continue developing advanced teaching skills, namely those related to learners' needs.

In addition to this, the findings reveal that instructional competence is developed gradually via the combination of structured training, practicum, and mentorship. Strengths and weaknesses identified here reveal the need for coherence between teacher preparation programs and procedural and advanced competencies. The suggested training program can be considered a feasible solution to overcome this challenge since it is aimed at promoting experience-based learning and skills development.

Generally, the study emphasizes the importance of improving the practice, supervisory process, and provision of feedback, as well as introducing new teaching methods within teacher training programs. Through doing this, the institutions will be able to equip pre-service teachers with the necessary skills needed in meeting the challenges of modern day teaching and learning processes.

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COMPARATIVE EVALUATION OF LEARNING MANAGEMENT SYSTEMS: GOOGLE CLASSROOM AND EDMODO IN HIGHER EDUCATION CONTEXTS

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ABSTRACT The study talks about how the use of Google Classroom and Edmodo LMS in a particular educational establishment is being compared in terms of effectiveness in their application to five different areas. These are distribution, communication, interaction, course management, and device capability. The research method that will be used in conducting this study will be the descriptive and comparative research approach, wherein the researcher will utilize a researcher-made questionnaire among the instructors and students who have experience using the two systems. From the results, Edmodo was highly favored when it came to communication, interaction, and management of classes because of its social networking capabilities. Google Classroom outperformed Edmodo in the use of devices and process effectiveness, especially regarding mobile connectivity and the ability to integrate cloud-based software. However, both online platforms exhibited high levels of efficiency when it comes to delivery methods. In addition, the findings revealed that both LMS systems have certain strengths that include accessibility, ease of use, and facilitating paperless learning systems. Nevertheless, the constraints, such as reliance on the availability of an internet connection and devices, are also very important to take into account. The former LMS system showed more strength than the latter. According to the results of this study, the effectiveness of LMS will depend on the conditions in which it operates. Thus, Edmodo is better suited to an interactive style of education, while Google Classroom works well in a resource-oriented approach.

Keywords: learning management system, Google Classroom, Edmodo, e-learning, higher education

INTRODUCTION

The introduction of Learning Management Systems (LMS) into higher education has become an essential aspect of modern learning and instruction. As a result of rising requirements for technology-based learning, institutions have started implementing LMS solutions for content delivery, communications, assessments, and overall instructional management. Such LMS solutions as Google Classroom and Edmodo can help to achieve greater accessibility, collaboration, and learner engagement. They give instructors the chance to structure their lessons while allowing learners to access all materials from any place. Several empirical studies showed that LMS solutions have a positive impact on learning processes, contributing to greater efficiency, autonomy, and improved performance (Bondarenko et al., 2019; Muslem, 2024). At the same time, the adoption of LMS tools was largely stimulated by recent transformations towards digitalization in the field of education.

The application of LMS in higher education institutions goes beyond content delivery. This involves a deeper change in the process of pedagogy, from the conventional teacher-centered method of pedagogy to learner-centered pedagogy that is both interactive and collaborative. The LMS tools allow for both asynchronous and synchronous learning, hence facilitating continuous communication between the teachers and the students. According to Nguyen (2022), the appropriate utilization of LMS tools leads to increased engagement levels of the learners, self-paced learning, and more efficient communication processes.

Furthermore, LMS tools help in fostering the digital competencies of both the teachers and the learners, as is essential in the contemporary education system.

Despite being highly prevalent, there are various issues associated with the implementation of LMS systems. The obstacles in question are associated with user-friendliness, low levels of digital literacy, and infrastructure-related constraints, such as unreliable Internet connection and insufficient access to hardware. In this regard, studies demonstrate that poor user-friendliness can pose problems for learners, as it can prevent them from concentrating on acquiring new knowledge and skills and make them concentrate on overcoming technical barriers instead (Nakamura et al., 2018). At the same time, implementing ICT into learning activities is also dependent on various factors (Nguyen, 2022; Ekuase-Anwansedo et al., 2021)

In relation to the Philippines, there have been additional empirical studies that indicate that even if the LMS platforms, such as Google Classroom, are considered efficient and convenient, learners still face various issues due to technological and infrastructural limitations. For example, there was research conducted among Bachelor of Science in Criminology students, which showed very positive results on the effectiveness of Google Classroom when it comes to accomplishing learning activities and fostering academic participation. Nevertheless, there were also some persistent problems that included poor internet connectivity and a lack of devices, thus impacting learners' ability to effectively leverage the LMS (Gerada and Efondo, 2020).

Additionally, high satisfaction levels coupled with difficult levels suggest that there is a complicated correlation between usability and accessibility. Although students might appreciate the advantages of LMSs, their learning process may continue to be confined within specific context limitations. It is necessary to pay attention to both sides in order to create an appropriate environment for learning.

One more crucial challenge associated with implementing an LMS system is the problem of the digital divide in countries that do not have sufficient technological infrastructure, especially in developing nations. Economic differences have a great impact on students' ability to engage in e-learning systems. The fact is that students from economically disadvantaged families may experience problems when trying to access LMS platforms. This demonstrates the significance of taking into account context in the process of implementing and adopting LMS systems.

The theoretical grounding of this study is anchored in the Technology Acceptance Model (TAM), which emphasizes perceived ease of use and perceived usefulness as key determinants of technology adoption. TAM has been widely used in educational research to explain user behavior toward digital technologies, including LMS platforms. Studies have consistently shown that students' and teachers' acceptance of LMS platforms is strongly influenced by how easy the system is to use and how effectively it supports learning tasks (Nguyen, 2022; Le, 2022). When users perceive an LMS as useful and user-friendly, they are more likely to adopt and continue using the system.

However, recent studies suggest that TAM alone may not fully explain LMS adoption, as external factors such as digital skills, infrastructure, and institutional support also play significant roles. For instance, extended models of TAM highlight the influence of social factors, technological readiness, and behavioral intention in determining LMS usage (Le, 2022). Additionally, cultural and contextual factors may affect how users perceive and interact with LMS platforms, indicating the need for a more holistic approach to understanding technology adoption in education (Panicker, 2020). These insights suggest that LMS implementation should consider not only system usability but also broader environmental and institutional factors.

In the context of higher education institutions, particularly in developing regions, LMS adoption is influenced by both technological and socio-economic factors. Issues such as limited access to devices, unreliable internet connectivity, and inadequate technical support continue to affect students' ability to fully utilize LMS platforms. These challenges highlight the importance of selecting appropriate LMS tools that align with institutional capabilities and learner needs. Furthermore, institutional commitment, including training programs and infrastructure development, plays a critical role in ensuring successful LMS implementation (Alrasheedi et al., 2018).

Comparative studies on LMS platforms reveal that different systems offer distinct advantages depending on their design and functionality. Google Classroom, for instance, is known for its simplicity, integration with cloud-based tools, and efficiency in managing academic workflows. Its features support the organization of learning materials, assignment submission, and feedback mechanisms, making it a practical tool for structured learning environments. On the other hand, Edmodo is recognized for its social networking features, which promote interaction, collaboration, and student engagement. It provides a more interactive and less formal learning environment, which can enhance communication and peer-to-peer learning.

The distinction between these LMS platforms reflects two different pedagogical orientations: Google Classroom as a workflow-oriented system and Edmodo as a social learning platform. Workflow-oriented systems focus on efficiency, organization, and administrative functions, while social learning platforms emphasize interaction, collaboration, and engagement. Studies suggest that both approaches are essential for effective learning, as they address different aspects of the educational process. However, the effectiveness of each LMS depends on how well it aligns with instructional goals and learner needs.

While previous studies have examined LMS adoption, usability, and effectiveness, there remains a significant research gap in comparative analyses of LMS platforms within specific institutional contexts, particularly in Philippine higher education. Existing studies often focus on a single LMS or general technology adoption trends, with limited attention to how different LMS platforms perform across specific functional clusters such as communication, interaction, and course administration. Furthermore, there is a lack of empirical evidence on how user preferences vary between faculty and students in relation to LMS features.

Additionally, much of the existing literature emphasizes technological factors while giving less attention to pedagogical implications. There is a need for studies that not only compare LMS platforms but also examine how these systems support teaching and learning processes. Understanding these aspects is crucial for developing effective LMS implementation strategies that enhance both instructional delivery and student learning outcomes.

This study addresses these gaps by providing a comparative evaluation of Google Classroom and Edmodo within the context of higher education. By analyzing LMS performance across functional clusters and examining user preferences, the study offers insights into the strengths and limitations of each platform. This approach contributes to a more comprehensive understanding of LMS effectiveness and supports evidence-based decision-making in educational technology adoption.

Thus, this study aimed to evaluate and compare Google Classroom and Edmodo based on user perceptions and functional effectiveness. Specifically, it sought to:

1. Determine the preferred LMS tools across functional clusters
2. Identify LMS preference among faculty and students
3. Examine the advantages of each LMS
4. Determine the disadvantages of each LMS

By addressing these objectives, the study contributes to the improvement of LMS implementation strategies in higher education. It provides valuable insights for educators, administrators, and policymakers in selecting and optimizing LMS platforms to enhance teaching and learning outcomes. Ultimately, the study underscores the importance of aligning technological tools with pedagogical goals and institutional contexts to achieve effective and sustainable digital learning environments.

METHODOLOGY

This study employed a descriptive-comparative research design, which is appropriate for examining similarities and differences between variables without manipulating them (Creswell, 2013). The design enabled the researchers to systematically compare the features, advantages, and disadvantages of two Learning Management Systems (LMS), namely Google Classroom and Edmodo, as perceived by faculty members and students. Descriptive-comparative research is widely used in educational studies to identify patterns, relationships, and distinctions across variables within a given context. As noted by Esser and Vliegthart (2017), comparative research provides a structured approach to understanding how variables differ or align within specific conditions. In this study, the design facilitated a comprehensive evaluation of LMS effectiveness in supporting teaching and learning processes in higher education.

The survey's respondents were composed of teachers and students of the Guimaras State College with previous experiences in both Google Classroom and Edmodo. Through the set criteria, participants were guaranteed to have sufficient knowledge about both online tools. Slovin's formula was used to determine the sample size needed for the research, considering that the said formula is often used in computing sample sizes with acceptable margins of error. Also, purposive sampling was done to ensure that participants were qualified for the research.

This study made use of an investigator-created questionnaire as the primary research tool. The research tool consists of two sections. Section I collects information about the characteristics of the respondents, which include the classification (whether faculty member or student), the degree of ICT orientation, and prior exposure to LMS systems. Section II, on the other hand, is comprised of questions for evaluating the features of Google Classroom and Edmodo in accordance with five sets of functionality: distribution, communication, interaction, course administration, and device capability. The five functional sets were taken from established evaluation models of LMS.

The validity of the instrument was assured through content validation conducted by three experts specializing in the area of education and research. The experts provided an evaluation of the instrument concerning its clarity, relevance, and alignment with the research objectives. Modifications were made to improve the questionnaire. Before conducting data collection, a pilot test was carried out on the instrument. The reliability of the instrument was tested using the Cronbach alpha coefficient, resulting in an $\alpha = 0.87$ score.

The method of data gathering was carried out in a systematic manner. First, permission was secured to conduct the study. The participants were then briefed about the nature and importance of the study, and the steps needed to answer the questionnaires were clearly explained to them. The main tool used for gathering the data was an online questionnaire form.

For the statistical treatment, the study employed descriptive statistical tools, particularly the mean, to analyze and interpret the data. The mean was used to determine the average level of agreement of respondents for each LMS feature and cluster.

The study has been conducted in accordance with ethical standards. Participation was voluntary, and participants were assured that they had the freedom to leave the process at any time without repercussions. Confidentiality was maintained in the handling of all the data collected. The researcher was committed to upholding ethical standards such as truthfulness and sincerity.

RESULTS AND DISCUSSION

Preferred LMS Tools per Functional Cluster

The findings indicate that both Learning Management Systems demonstrate strong performance in distribution tools, while Edmodo shows higher preference in communication, interaction, and course administration. In contrast, Google Classroom demonstrates superiority in device compatibility and workflow efficiency.

The comparative evaluation of Learning Management Systems across functional clusters reveals a nuanced understanding of how platform design influences instructional effectiveness. The strong performance of both platforms in distribution tools reflects the fundamental purpose of LMS technologies—to provide reliable access to instructional materials. Distribution tools, which include document sharing, syllabus dissemination, and multimedia integration, are core features embedded in most LMS platforms. As emphasized by Bondarenko et al. (2019), LMS platforms are inherently designed to support asynchronous learning by ensuring that educational resources are accessible anytime and anywhere. This explains why both platforms achieved high levels of agreement in this domain, as content delivery is a baseline expectation for any digital learning environment.

However, the distinction becomes more evident in higher-order functionalities such as communication and interaction. Edmodo's higher ratings in these clusters can be attributed to its social networking architecture, which supports dynamic and collaborative learning environments. The platform integrates features such as threaded discussions, real-time messaging, and peer interaction tools, which facilitate active engagement. This aligns with Nguyen (2022), who argued that LMS platforms that promote interaction significantly enhance student engagement and learning outcomes. The ability to engage in meaningful dialogue, exchange ideas, and collaborate with peers is essential in fostering deeper learning, particularly in online environments.

From a theoretical perspective, Edmodo's design aligns closely with constructivist learning theory, which emphasizes that knowledge is constructed through social interaction and collaborative processes. The platform's features enable learners to actively participate in the learning process rather than passively receive information. In contrast, Google Classroom operates as a workflow-oriented system, focusing on efficiency, organization, and task management. While this design enhances administrative efficiency, it may limit opportunities for interactive learning experiences.

The observed differences in communication tools further highlight the importance of system design in shaping user experience. Communication tools in LMS platforms are not merely supplementary features but are central to the learning process. Effective communication facilitates feedback, clarification, and engagement, which are critical for student success. Heggart and Yoo (2018) emphasized that LMS platforms must support both pedagogical and technological dimensions to maximize their effectiveness. In this context, Edmodo's integrated communication tools provide a more holistic learning experience by combining instructional delivery with interactive engagement.

In terms of interaction tools, Edmodo again demonstrates superiority due to its ability to support collaborative activities such as group discussions, project-based learning, and peer feedback. These features are essential for promoting active learning and critical thinking. According to Panicker (2020), the effectiveness of LMS platforms is significantly influenced by their ability to facilitate meaningful interaction and collaboration. The presence of interactive features reduces cognitive isolation, which is a common challenge in online learning environments.

On the other hand, Google Classroom's strength in device compatibility reflects its integration with cloud-based technologies and its adaptability across multiple platforms. The system's compatibility with mobile devices and seamless integration with Google Workspace enhance accessibility, making it a practical choice for institutions with diverse technological infrastructures. Alrasheedi et al. (2018) identified accessibility and technological compatibility as critical factors influencing LMS adoption, particularly in higher education settings.

The findings also highlight the role of usability in determining LMS effectiveness. Usability refers to how easily users can navigate and utilize a system to achieve their objectives. Nakamura et al. (2018) noted that poor usability can hinder learning by increasing cognitive load, as users may struggle to navigate complex interfaces. In this regard, Google Classroom's simplified interface contributes to its high rating in device compatibility, as it minimizes technical barriers and enhances user experience.

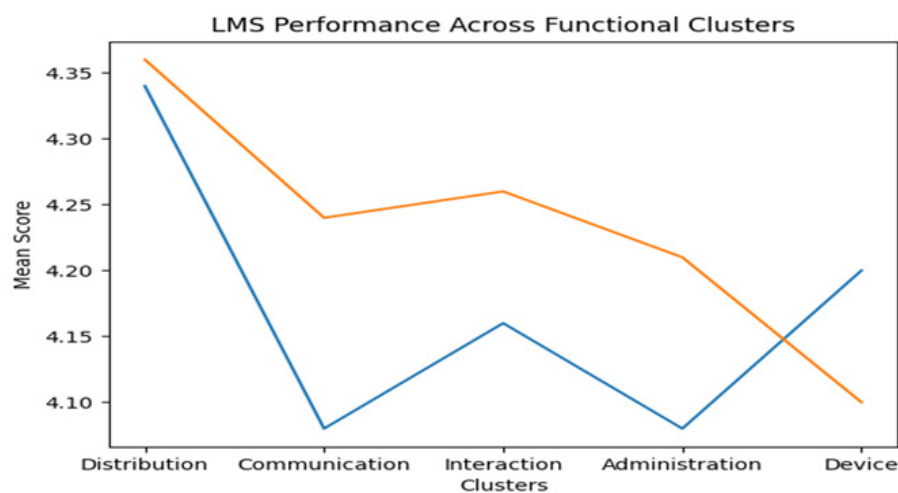
Furthermore, the differences observed in course administration tools suggest that Edmodo provides a more comprehensive set of functionalities for managing instructional processes. Features such as built-in quizzes, analytics, and progress tracking enable educators to monitor student performance more effectively. This aligns with Shishakly (2021), who emphasized that LMS platforms play a critical role in managing instructional processes and supporting data-driven decision-making in education.

Overall, the findings suggest that LMS effectiveness is not determined by a single factor but by the interplay of multiple dimensions, including functionality, usability, and pedagogical alignment. While both platforms demonstrate strong performance in distribution tools, their differences in communication, interaction, and administration highlight the importance of aligning LMS selection with instructional goals and user needs. This reinforces the notion that LMS implementation should adopt a flexible approach, integrating multiple platforms to address diverse educational requirements.

Table 1. Preferred Learning Management System (LMS) Tools per Functional Cluster

Cluster	Google Classroom (Mean)	Interpretation	Edmodo (Mean)	Interpretation
Distribution Tools	4.34	Strongly Agree	4.36	Strongly Agree
Communication Tools	4.08	Agree	4.24	Strongly Agree
Interaction Tools	4.16	Agree	4.26	Strongly Agree
Course Administration	4.08	Agree	4.21	Strongly Agree
Device Compatibility	4.20	Strongly Agree	4.10	Agree
Grand Mean	4.17	Agree	4.23	Strongly Agree

Figure 1. Performance Across Functional Cluster



2. Learning Management System (LMS) Preference of Faculty and Students

The findings indicate that Edmodo is generally preferred over Google Classroom, although preferences vary depending on user roles and functional requirements. The preference for LMS platforms reflects a complex interplay of user needs, technological familiarity, and pedagogical expectations. The overall preference for Edmodo suggests that users value platforms that support interaction and collaboration. However, this preference is not uniform across all users, as faculty and students exhibit different priorities when selecting an LMS.

Faculty members tend to prioritize efficiency, organization, and ease of management. Google Classroom's integration with cloud-based tools allows for streamlined workflow management, including assignment distribution, grading, and feedback. This aligns with Bhat et al. (2018), who highlighted that Google Classroom enhances instructional efficiency by simplifying administrative tasks. For educators, the ability to manage courses effectively is a critical factor in LMS selection, as it directly impacts teaching productivity.

In contrast, students prioritize engagement, interaction, and ease of use. Edmodo's social networking features create a more interactive learning environment, which enhances student participation and motivation. Encalada and Leyba (2020) emphasized that interactive LMS platforms significantly improve student engagement and learning outcomes. The ability to communicate with peers, participate in discussions, and collaborate on tasks makes Edmodo more appealing to students.

The divergence in preference can be explained through the Technology Acceptance Model (TAM), which posits that perceived usefulness and perceived ease of use are key determinants of technology adoption. Faculty members perceive Google Classroom as more useful for managing instructional tasks, while students perceive Edmodo as easier to use and more engaging. According to Al-Marroof and Al-Emran (2018), user acceptance of LMS platforms is influenced by how well the system aligns with user expectations and needs.

Furthermore, the findings highlight the role of digital familiarity in shaping LMS preference. Students are generally more accustomed to social media platforms, making Edmodo's interface more intuitive. This familiarity reduces cognitive load and enhances user experience. Panicker (2020) noted that user-friendly design is a critical factor in technology adoption, as it influences user satisfaction and engagement.

The preference for Edmodo also reflects the increasing importance of learner-centered approaches in education. Traditional teacher-centered models are gradually being replaced by interactive and collaborative learning environments. LMS platforms that support these approaches are more likely to be preferred by users. Nguyen (2022) emphasized that LMS platforms play a crucial role in promoting self-directed learning and student engagement, which are essential for 21st-century education.

However, it is important to note that preference does not necessarily indicate superiority. The effectiveness of an LMS depends on how well it aligns with instructional goals and institutional context. Google Classroom's strengths in efficiency and accessibility make it a valuable tool for structured learning environments, while Edmodo's interactive features make it more suitable for collaborative learning.

The findings also suggest that LMS preference is influenced by external factors such as infrastructure and institutional support. Gerada and Efondo (2020) highlighted that students' experiences with LMS platforms are affected by factors such as internet connectivity and device availability. These factors may influence user preference by limiting access to certain features.

Learning Management System preference is a multidimensional construct influenced by user roles, technological familiarity, and contextual factors. The findings underscore the importance of adopting a flexible approach to LMS implementation, where multiple platforms are used to address diverse educational needs.

Table 2. LMS Preference Based on Functional Effectiveness

Learning Management System	Grand Mean	Interpretation	Preference
Google Classroom	4.17	Agree	Moderate Preference
Edmodo	4.23	Strongly Agree	High Preference

3. Advantages of Each Learning Management System

Both LMS platforms share common advantages such as accessibility, ease of use, and support for paperless learning, while Edmodo offers additional features related to interaction and collaboration.

The shared advantages of both LMS platforms reflect their fundamental role in modern education. Accessibility and ease of use are essential features that enable students and educators to engage with digital learning environments effectively. Sukmawati and Nurdin (2020) emphasized that LMS platforms facilitate flexible learning by allowing users to access educational resources anytime and anywhere. This flexibility is particularly important in remote and blended learning contexts, where traditional classroom interactions are limited.

The paperless nature of LMS platforms also contributes to cost efficiency and environmental sustainability. By reducing the need for physical materials, LMS platforms minimize expenses and promote eco-friendly practices. This aligns with global trends in digital education, where institutions are increasingly adopting paperless systems to enhance efficiency and sustainability.

Edmodo's additional advantages, particularly in interaction and collaboration, highlight its strengths as a social learning platform. Features such as discussion boards, group activities, and peer interaction tools create a more engaging learning environment. According to Nguyen (2022), interactive LMS platforms enhance student engagement by promoting active participation and collaboration. These features are essential for fostering critical thinking and problem-solving skills.

The ability to connect with parents and integrate social networking features further enhances Edmodo's functionality. These features promote transparency and accountability, allowing stakeholders to monitor student progress and engagement. This aligns with the concept of collaborative learning communities, where multiple stakeholders contribute to the learning process.

Google Classroom's advantages, on the other hand, are rooted in its simplicity and efficiency. Its integration with Google Workspace allows for seamless organization of instructional materials and streamlined workflow management. Philipose and Rajagopal (2019) highlighted that Google Classroom is an effective tool for managing academic tasks due to its user-friendly interface and integration capabilities.

The differences in advantages reflect the distinct design philosophies of the two platforms. Edmodo prioritizes interaction and engagement, while Google Classroom focuses on efficiency and organization. These differences highlight the importance of aligning LMS selection with instructional goals and user needs.

Table 3. Advantages of Google Classroom and Edmodo

Advantage	Google Classroom	Edmodo
Easy Access	✓	✓
Online Submission	✓	✓
Paperless System	✓	✓
Cost Efficiency	✓	✓
User-Friendly	✓	✓
Collaboration	✓	✓
Resource Sharing	✓	✓
Parent Connection	X	✓
Online Quiz/Poll	X	✓
Social Networking	X	✓
Total Advantages	7	10

4. Disadvantages of each Learning Management System

Both LMS platforms share common disadvantages related to internet dependency, device availability, and lack of offline functionality, while Google Classroom exhibits additional usability challenges.

The shared disadvantages of both LMS platforms highlight the broader challenges associated with digital learning environments. Internet dependency is a significant limitation, particularly in developing regions where access to reliable connectivity is limited. Gerada and Efondo (2020) emphasized that internet connectivity issues significantly affect students' ability to participate in online learning.

The lack of offline functionality further exacerbates this issue, as students without stable internet access are unable to fully utilize LMS platforms. This highlights the need for LMS systems that support offline access or low-bandwidth environments.

Device availability is another critical challenge, reflecting the digital divide in education. Students from resource-constrained backgrounds may lack access to appropriate devices, limiting their participation in online learning. Alrasheedi et al. (2018) identified technological infrastructure as a key factor influencing LMS adoption and effectiveness.

Google Classroom's additional disadvantage related to interface confusion suggests usability challenges that may affect user experience. Nakamura et al. (2018) noted that usability issues can increase cognitive load, making it more difficult for users to navigate the system effectively.

Edmodo's fewer disadvantages suggest a more user-centered design, which enhances usability and satisfaction. However, it is important to recognize that no LMS is without limitations, and addressing these challenges requires a comprehensive approach that includes infrastructure development, user training, and system improvement.

Disadvantage	Google Classroom	Edmodo
Internet Dependency	✓	✓
No Offline Access	✓	✓
Device Availability Issues	✓	✓
Interface Confusion	✓	X
Total Disadvantages	4	3

CONCLUSION

This study concludes that both Google Classroom and Edmodo are effective Learning Management Systems that support essential instructional functions such as content delivery, accessibility, and paperless learning. However, their effectiveness varies depending on system design and instructional context. Edmodo demonstrated greater strength in communication, interaction, and course administration due to its social networking features, making it more suitable for collaborative and engagement-driven learning environments. In contrast, Google Classroom excelled in device compatibility and workflow efficiency, supporting structured and task-oriented instruction. The findings further reveal that LMS preference is influenced by user roles and needs. Faculty members tend to favor efficiency and organization, while students prioritize interaction and engagement. This highlights that LMS effectiveness is not universal but context-dependent. Additionally, challenges related to internet connectivity, device availability, and lack of offline access remain critical concerns that affect the overall utilization of LMS platforms. Study emphasizes that no single LMS can fully address all instructional demands. Effective implementation requires a flexible and context-sensitive approach that aligns technological tools with pedagogical goals and institutional capabilities. By strategically selecting and integrating LMS platforms, higher education institutions can enhance teaching effectiveness, improve student engagement, and support sustainable digital learning.

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Digital Marketing Readiness and Agricultural Marketing Practices of Farmers in Guimaras Island, Philippines

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ABSTRACT Agriculture still plays an important role in the economy of the Philippines. However, small-scale farmers are still experiencing difficulties in gaining access to premium markets because of the use of conventional marketing channels. This research evaluated the marketing situation and digital preparedness of farmers in Guimaras Island by examining their socioeconomic characteristics, agricultural and marketing practices, behavioral tendency towards internet marketing, and the barriers that affect their adoption. The research used a descriptive approach wherein the participants were purposively selected from farmers in five municipalities of Guimaras Island. Results revealed that farmers are predominantly engaged in diversified crop production, with mango as the dominant commodity, and rely mainly on direct selling within localized markets. While all respondents demonstrated familiarity with online marketing and a majority expressed willingness to adopt it, significant barriers persist. These include concerns about fraudulent transactions, unsecured payment systems, transport-related losses, and limited internet connectivity. The study on the adoption of digital marketing among farmers will not be influenced by awareness alone, but also by trust and logistics. It is important that institutions be reinforced, that there be improvements in digital security measures, and that post-harvest logistics be improved to help farmers become part of digital agriculture.

Keywords: Agricultural marketing, Digital readiness, Farmers, Guimaras, Online marketing

INTRODUCTION

For the Philippines, agriculture continues to be at the core of its economic development and plays an integral role in the income generation of people by providing employment to many of its people. The contribution of agriculture cannot be overlooked because, especially in underdeveloped countries, agriculture still constitutes a vital activity for income generation (Koutodis, 2018). For the Philippines, agriculture provides work for millions of small farmer households that farm in small production units. As per data provided by the Philippine Statistics Authority, most of the farms in the country are small and average around one hectare (Bersales, 2015). Small-farm households have been instrumental in rural development and in providing food security. However, several structural and economic obstacles face small farmer households in the country.

Access to markets is one of the key issues that farmers face in agricultural development. In the case of small-scale farmers, there is a fragmented supply chain in which their products have to pass through many hands before reaching the consumer. These middlemen have an important role in agriculture marketing because they help distribute products and gain access to the market.

But in many cases, their involvement is often associated with decreased profit margins for farmers because of price fixing and informational asymmetries in the market (Yamashita, 2019). In most cases, farmers are usually deprived of information concerning prices in the market and the ability to bargain with their buyers and have no direct connection to consumers. This limits their capacity to extract maximum value from their produce.

The inefficiencies associated with traditional agricultural marketing systems are further exacerbated by issues such as overproduction, price volatility, and limited market diversification. The cases from the Philippines demonstrate the economic implications that arise from excess production in agriculture. As seen in the examples of excess tomato production in Ifugao and excess mango production in Ilocos, there was an evident fall in prices, causing farmers to sell their products at lower costs than what was required to produce them (Department of Agriculture, 2020; Ocampo, 2019). Also, there is an example of excess sayote production in Benguet that caused the prices in the market to fall significantly (Galvez, 2019).

In view of these issues, there is increasing emphasis on the use of digital technologies as a solution to the problems facing agricultural marketing practices. The adoption of digital technology in agriculture has created many prospects for farmers by allowing them to reach wider markets and become aware of prices, as well as to create connections with the consumers. Online marketing has emerged as a key method through which the process becomes less dependent on intermediaries and can operate in a more efficient manner. Digital technologies have allowed farmers to interact with potential customers and complete transactions without the need for additional players involved in this exchange. This was especially important during times of crises like the coronavirus outbreak.

The possible advantages of online marketing in the agriculture sector have been supported by previous research studies that suggest that it can lead to improved market opportunities, increased income levels, and reduced transaction costs. As per Rameshkumar (2022), online marketing increases the presence of agricultural goods in the market and helps the farmers connect with a broader audience base, leading to increased sales opportunities. Likewise, Peter & Latha (2021) have stressed on the importance of online marketing in enhancing the outreach of agricultural producers among different consumer groups irrespective of geographical boundaries.

Moreover, the utilization of online marketing is also associated with the application of social media and digital communication technologies. Some research studies indicate that social media acts as an important platform for marketing agriculture-based products and increasing marketing efficiency. According to Balkrishna & Deshmukh (2017), the social media platform increases marketing communication capabilities and allows farmers to communicate directly with consumers. Likewise, other research studies conducted by Mwangi & Wagoki (2016), Ogunniyi & Ojebuyi (2012), and White et al. (2014) revealed that digital communication technology impacts the performance and turnover of agricultural firms. The above discussion reveals that digital technology can act as an effective tool for reforming conventional agricultural marketing practices.

Nevertheless, while these advantages exist, the use of online marketing by farmers faces several challenges, including limitations. For instance, the farmers' poor understanding of technology, especially for the older generation who have limited knowledge about how to use technology platforms, is one of the main limitations facing farmers' online marketing. Lack of technological devices, such as phones and computers, and access to the Internet is another challenge. These farmers are unable to take advantage of these technological tools for advertising purposes due to this limitation. Issues related to transaction safety, including digital frauds and unsafe payment systems, are also prevalent and create fear among farmers while engaging in online transactions.

The issue of logistics can also hinder the process of online marketing. For example, when transporting food products, it is important to handle and package the items properly for quality maintenance. Otherwise, the products can be damaged during transport, resulting in losses to the farmers and discouraging them from using online marketing methods. The lack of an effective logistics system and cooperation between farmers can also impede the development of such a strategy.

According to innovation and technology diffusion theory, innovation and the adoption of online marketing techniques in agricultural marketing are influenced by certain factors. These include the perceived value and usefulness of innovation or technology, how easy it is to use, and its compatibility with present systems. Adoption of online marketing would be high if farmers perceive online marketing to be useful and easy to use and if it is compatible with what they are presently doing. However, if barriers to adoption exceed perceived benefits, then adoption levels will be low.

Furthermore, the theory of value chains serves as an ideal tool in illustrating the use of e-marketing in increasing the profitability in agriculture. This is because online marketing helps in creating a shorter value chain as well as limiting the activities of intermediaries through allowing farmers to engage directly with consumers. Consequently, the profits earned by the farmers will increase since they can take a bigger percentage from the final value of the product in the market.

While there is an increasing number of scholarly works on agriculture digitalization and online marketing, there still is an insufficient body of literature regarding the level of farmers' readiness towards using online marketing. The majority of previous research works on this topic tend to analyze the topic at large without considering particular geographic zones such as Guimaras Island. It is important to note the necessity to analyze the particular geographic zone from the perspective of socio-economic and infrastructural characteristics. The island of Guimaras, famous for its agricultural efficiency and diversified crop production, offers a distinct environment within which the possibilities of online marketing within agriculture can be studied. Guimaras is a prolific source of mangoes and various high-end crops; therefore, it serves as an ideal platform to study alternative marketing techniques. Notwithstanding, very few studies have been conducted regarding the digital marketing activities of farmers here and the obstacles they encounter.

Given these considerations, this study aims to establish a profiling of farmers and agricultural commodities available in Guimaras Island and its readiness to online marketing. In particular, this research seeks to investigate the socio-economic characteristics of the farmers, evaluate their production and marketing behavior, gauge their knowledge and willingness to embrace online marketing techniques, and establish the issues and conditions that influence their embracement of digital marketing methods. By addressing these objectives, the study contributes to a deeper understanding of the opportunities and constraints associated with online marketing in agriculture and provides insights for developing targeted interventions to support farmers in the digital economy.

METHODOLOGY

This study made use of descriptive research design. Data were collected from farmers in the five (5) municipalities of Guimaras, namely: Buenavista, Jordan, Nueva Valencia, San Lorenzo and Sibunag. Secondary data on the list of farmers and registered farmer's organizations/ cooperatives in the province were collected from the respective agricultural offices of each municipality and the Provincial Office for Agricultural Services (POAS). Purposive sampling was employed where only large farms that continuously operate and produce products even during pandemic were included in the survey. This is to ensure sustainable production and supply of agricultural products in the market. Data were gathered using a researcher-made questionnaire composed of three (3) parts. Part 1 contained the demographic profile of the farmers and Part 2 focused on product profile while Part 3 determined the farmer's behavior towards online marketing. Frequency count, percentages, and ranking were used to analyze the data.

RESULTS AND DISCUSSION

1. Socio-Economic Profile of Farmers

Farmers' profile data suggest that agriculture sectors depicted in this study consist of fairly mature, land-holding, and educated farmers. Age groupings indicate that farmers in selected areas are mostly middle-aged or older people. While there may be pros and cons in having such farmers, they may have certain characteristics that need to be considered. For example, old farmers may be able to leverage accumulated knowledge and good judgment about their farming environment. However, having an old farmer community may be indicative of potential issues in terms of adoption of innovations, succession planning, and sustainability of their businesses.

The predominance of male respondents also reflects the traditional structure of agricultural labor and farm management in many rural communities. However, this does not necessarily imply that women have no involvement in agriculture. Rather, it implies that women's lack of control over production and marketing means that the decision-making power could be vested with the male members of the family. This aspect is significant since it indicates that new ways of marketing, such as use of online systems, will depend on who controls the decision-making process in the farm business.

A notable strength in the profile is the high educational attainment of the respondents. This observation shows that there is a high proportion of college educated farmers, which implies a better human capital endowment when compared to the commonly held stereotype that farmers are poorly educated. This is important since educated individuals tend to be more receptive to technology adoption. In the context of online marketing, this profile implies that the barrier may not primarily be lack of cognitive ability or inability to learn digital tools, but rather concerns related to infrastructure, trust, logistics, and risk. In other words, the respondents appear educationally capable of adapting to online marketing systems if enabling conditions are present.

Given the range of income from below ₱20,000 to above ₱1.5 million annually, there appears to be considerable variability in income for agricultural farms. This income variation is probably related to crop type, farming scale, timing of sales, and seasonality. It is not uncommon in agricultural societies that income tends to vary greatly due to the dependence on harvests, market pricing, and climate. The wide range of incomes in this study suggests that farmers' preparedness for online marketing can also be influenced by their financial stability. Farmers earning more could afford to take risks and allocate money for packaging, logistics, and digital media, trying out direct marketing strategies.

The variation in the number of years involved in farming operations is another way of emphasizing the variety among the respondents. There are those who come from a long history of farming, and there are those who are recent entrants in the sector. This implies the presence of both traditional farming knowledge and new entrepreneurial mindset. In addition, Velasco (2019) highlighted the effect of the number of years of farming on managerial skills and operational efficiency. Experienced farmers are likely to have better production knowledge, whereas recent entrants are more innovative.

The size of the farm and ownership of the land form two critical structural results. The farm sizes in this study vary between 2 and 12 hectares, and all the farmers own the land that they cultivate. This suggests that they have a better production base than the situation prevailing in many other contexts where there are challenges with land tenure. Land ownership enables the farmers to plan their production activities better. Fan and Rue (2020) emphasized that smallholders' market success depends not only on production but also on their ability to connect to stable and rewarding market systems. In this case, ownership may support the willingness to consider innovations such as online marketing because producers have more stable control over supply and production continuity.

In sum, based on the socio-economic characteristics of the interviewees, they have a number of advantages conducive to innovation in terms of marketing practices: education, land ownership, and fairly large farms. However, considering their age composition, gender bias in decision making, and variable incomes, one can conclude that preparedness for engaging in online marketing could be affected both positively and negatively. In particular, this means that assistance efforts cannot be based on the assumption that farmers are not ready due to insufficient education. The profile also supports the argument that readiness for digital marketing is not merely a matter of awareness, but a function of socio-economic capacity, perceived risk, and institutional support.

Table 1. Profile of Farmers in Guimaras Island

Profile Variable	Key Findings	Interpretation
Age	52–69 years old	Farmers are generally in the older age bracket
Sex	71% male; 29% female	Farming operations are male-dominated
Educational attainment	86% college graduates; 14% high school graduates	Respondents have relatively high educational preparation
Monthly/annual income	Less than ₱20,000 to ₱1.5 million per year	Income varies widely and is influenced by seasonal production
Years in farming	1 to 35 years	Farmers have mixed levels of experience
Farm size	2 to 12 hectares	Respondents operate relatively large farms
Tenurial status	100% landowners	Farmers have secure control over production resources

2. Production and Marketing Practices of Farmers

Based on the analysis above, it can be concluded that a transition form of agriculture is practiced in Guimaras, whereby the farmers are involved in diversification exercises even while being reliant on conventional market systems. This involves farming a variety of crops, such as mangoes, durians, coffee, calamansi, cacao, and rambutan. This is because of the inherent dangers in farming, which range from climate changes, seasons, and pricing. This is inline with what Chay et al. (2019) stated regarding the usefulness of diversification to overcome shortcomings in conventional agricultural marketing systems.

Despite this diversification, mango production remains dominant in both cultivation and output. This reinforces Guimaras' identity as a major mango-producing region and provides a comparative advantage due to strong market demand and product reputation. But there is also the downside of vulnerability that comes with specialization. Farmers become susceptible to threats, including oversupply and unstable prices, owing to their dependency on a particular product. There are many cases in the past where, despite having high output, farmers suffered a drop in prices because they did not have a ready market for the produce (Ocampo, 2019; Galvez, 2019).

It is also important to note that the majority of agricultural produce is sold immediately after harvest, with little or no processing involved. This suggests that the farmers use the raw commodity model for marketing their agricultural produce since the goods are sold without undergoing any process. Although this method makes sales swift and saves on storage fees, it does not allow for added value. Such activities as processing, packing, and branding could add much value to the goods and increase earnings from them.

Immediate selling may be the result of many factors, but one of the most important factors can be the perishable nature of the farm products. As long as there are no sufficient storage or processing facilities available, the farmer has to sell his products immediately otherwise he faces a risk of losing his produce. However, in this way, he becomes vulnerable and has to agree to sell his produce at reduced prices.

Moreover, distribution patterns of markets suggest that there is still a significant degree of localization in agricultural marketing. Almost fifty percent of the agricultural products are distributed within Guimaras, while the remaining fifty percent goes to adjacent areas like Iloilo, Capiz, Bacolod, and Manila. This implies an attempt at market expansion but still retains regional concentration in terms of distribution. There could be several reasons why the market is dominated by local buyers. One reason could be the geographical closeness, reduced transport costs, and pre-existing buyer relationships.

Yet, a narrow orientation of the producers also points out to problems of scalability and entry into the more lucrative markets. To reach faraway markets, efficient logistics and transport infrastructure as well as information about markets are necessary. If not, it becomes difficult for farmers to enter other markets apart from their own. According to Yamashita (2019), the reliance of the farmers on conventional methods has been hampering them from realizing greater profits because of lack of competitive pricing and consumer networks.

The mode of selling reinforces the persistence of conventional practices. Direct selling is the dominant approach, but it does not always mean direct-to-consumer transactions. Farmers often sell to traders, vendors, or processors who still function as intermediaries. Although this reduces the number of intermediaries, it does not fundamentally change the structure of the market. Farmers remain part of traditional systems where pricing power is uneven and access to market information is limited.

This scenario serves as an example of the distinction between formal and functional disintermediation. While the farmers may be able to sell without intermediary services, they nevertheless work within markets where intermediaries hold sway. According to Yamashita (2019), the farmers must be offered other marketing means in order for them to take charge. Here, digital platforms provide such possibilities.

From a theoretical perspective, these findings align with value chain theory, which emphasizes that value is added at multiple stages from production to consumption. Farmers in Guimaras are primarily engaged in the production stage, with limited involvement in processing, distribution, or marketing. As a result, they capture only a small share of the total value generated. Expanding into downstream activities such as value addition and direct marketing could significantly enhance income and economic outcomes.

Overall, the production and marketing practices observed reflect a semi-commercial agricultural system. Farmers demonstrate strong production capacity and crop diversification, yet their marketing strategies remain underdeveloped. This mismatch between production potential and market capability is a common issue in developing agricultural systems, where improvements in production are not matched by advancements in marketing infrastructure. In relation to online marketing, the findings present both opportunities and challenges. The diversity of crops and volume of production suggest that farmers have the supply capacity to engage in digital markets. However, limitations such as lack of value addition, restricted market reach, and reliance on traditional selling methods indicate that transitioning to online marketing will require significant adjustments. Digital marketing is not merely a technological change but a transformation of the entire marketing system, including product presentation, logistics, pricing, and customer engagement.

Table 2. Product and Marketing Profile of Farmers

Indicator	Key Findings	Interpretation
Product varieties	Mango (71%), dragon fruit (57%), coffee (43%), calamansi (29%), cacao (29%), rambutan (14%)	Farmers cultivate diversified but fruit-centered crops
Volume of production	Mango: 16 tons/year; dragon fruit: 7 tons/year; rambutan: 3 tons/year; calamansi: 2 tons/year	Mango is the dominant commodity in terms of output
Uses of product	Mostly sold immediately after harvest; little to no processing	Marketing is oriented toward raw commodity sales
Market distribution	50% local market; 20% Iloilo; 10% each to Capiz, Bacolod, and Manila	Market reach is present but still regionally concentrated
Mode of selling	Direct selling is the dominant practice	Farmers rely on conventional and direct market channels

3. Farmers' Behavior Toward Online Marketing

The behavioral findings show that farmers are not unfamiliar with online marketing. In fact, universal familiarity indicates that online selling is already part of the broader social environment in which they operate. This is a crucial result because it shifts the discussion away from mere awareness and toward deeper issues of adoption readiness. Familiarity suggests that the concept of online selling is no longer novel. Farmers have already encountered it through observation, family networks, or community experiences. In behavioral terms, this means that the awareness stage of innovation diffusion has largely been achieved.

Just as important is the readiness to participate in online marketing. The finding shows that the respondents generally do not consider online marketing to be an unsuitable method for the agricultural sector. Rather, they seem to see some advantages in it. As Peter and Latha (2021) found, online marketing can prove to be beneficial to farmers because it helps expand the market by connecting producers with buyers in different locations. Likewise, according to Rameshkumar (2022), online marketing can be advantageous to marketing by helping lower its costs and providing favorable marketing conditions during disruptive periods.

This trend can also be explained using technology acceptance theories. Readiness is generally influenced by the perception of usefulness and ease of use. If the farmers perceive that online marketing will enable them to link up with customers in a more efficient manner and minimize the use of middlemen, thereby potentially improving prices, then they would be more willing. The high number of respondents who were motivated by observing other people using online marketing further emphasizes the importance of social proof.

Studies on social media in agricultural marketing support this interpretation. Balkrishna and Deshmukh (2017) argued that social media improves information flow and agricultural marketing efficiency. Similar conclusions were reached by Mwangi and Wagoki (2016), Ogunniyi and Ojebuyi (2012), Vassiliadou et al. (2011), and White et al. (2014), all of whom found that digital and social media tools positively affect agricultural promotion, communication, and turnover. These studies reinforce the finding that willingness among farmers is not accidental; it reflects growing recognition that digital tools have practical economic value.

Equally important, willingness must not be mistaken for complete readiness. While behavioral readiness is essential, it is not enough. The farmers are willing, yet may lack both the ability and willingness when it comes down to adoption. The implications, therefore, point to the existence of a favorable behavioral foundation for intervention, in that the issue now is not about convincing the farmers regarding the significance of online marketing, but rather enabling them to adopt it.

Table 3. Behavior of Farmers Toward Online Marketing

Indicator	Result	Interpretation
Familiarity with online marketing	100% familiar	Farmers are aware of the concept and practice
Willingness to engage	85% willing	There is strong behavioral openness to adoption
Source of influence	Exposure to relatives/friends doing online selling	Social exposure shapes behavioral intention

4. Challenges and Readiness for Online Marketing

However, the existence of both high willingness and high risk perception can be considered a “readiness-constraint paradox.” On one hand, farmers show readiness in terms of awareness and willingness. On the other hand, the institutional and infrastructural constraints prevent the adoption of digital marketing techniques. The phenomenon is consistent with the principles of the Technology Acceptance Model (TAM). According to TAM, the adoption process depends on not only perceived usefulness but also ease of use and risk. While farmers understand the usefulness of online marketing (broader market reach and better prices for their products), their doubts regarding fraud and payment risks negatively affect the perception of ease and security and, thus, lead to low behavioral intentions. Likewise, the theory of Diffusion of Innovations (by Rogers) states that innovation adoption can be impeded due to the perception of risks and compatibility issues. The farmers' inclination to sell their goods directly demonstrates that digital marketing cannot be considered a normalized practice in their farming networks.

Fraudulent transactions and insecure payment systems are common, underscoring the core problem of mistrust in digital networks. Contrary to conventional transactions, which rely on personal interaction, online marketing involves informational asymmetry and anonymity, making the participants feel exposed. Indeed, the results affirm Yamashita (2019), who noted that although online marketing can bypass the need for middlemen, it necessitates the implementation of governance mechanisms to safeguard both the buyer and the seller. In their absence, the farmers would consider digital platforms more risky than middlemen, regardless of the exploitative nature of the latter. Besides, according to Rameshkumar (2022), digital marketing is an efficient way of minimizing transaction costs and boosting profit margins but only if secure payment mechanisms are guaranteed.

Another critical barrier is losses during transport (42.9%), which reflects the perishability of agricultural products and inadequate logistics systems. Unlike non-perishable goods, agricultural commodities—especially fruits like mango and dragon fruit—are highly sensitive to handling, packaging, and delivery time. This finding is consistent with Chay et al. (2019), who noted that marketing inefficiencies in agriculture are often linked to poor post-harvest handling and transportation systems. The shift to online marketing intensifies this challenge because it requires longer distribution chains and higher quality standards. From a value chain perspective, this indicates that farmers remain concentrated at the production stage, with limited engagement in post-harvest value addition and

logistics management. Without improvements in packaging and cold-chain systems, digital marketing may increase exposure to risks rather than profitability.

Although less dominant than trust-related issues, internet connectivity (28.6%) remains a notable constraint. This reflects the broader issue of digital inequality in rural areas, where infrastructure development lags behind urban centers. The World Bank (2020) emphasized that digital agriculture can only succeed when supported by reliable internet infrastructure and access to digital services. In areas such as Sibunag and Nueva Valencia, connectivity limitations restrict farmers' ability to engage in real-time transactions, online promotions, and customer communication. However, the relatively lower percentage compared to other barriers suggests that connectivity is no longer the primary bottleneck, but rather part of a broader ecosystem challenge involving trust, logistics, and institutional support.

Interestingly, investment cost and lack of equipment were the least reported barriers (14.3%). This indicates a significant shift from traditional assumptions that technology affordability is the main obstacle in digital adoption. This finding supports Peter and Latha (2021), who observed that the proliferation of smartphones and social media platforms has reduced entry barriers for digital marketing. Farmers increasingly have access to basic digital tools, often through personal or family networks. Thus, the challenge is no longer access to technology, but rather effective utilization and integration into business practices. This reinforces the idea that digital transformation in agriculture is more of a systems issue than a technology issue.

The high level of willingness among farmers can be partly explained by observational learning, as many respondents reported exposure to relatives or peers engaged in online marketing. This aligns with social learning theory, where individuals adopt behaviors based on observed success within their social networks. Studies by Balkrishna and Deshmukh (2017) and Mwangi and Wagoki (2016) confirm that social media enhances information flow and marketing performance, thereby influencing adoption decisions. As farmers witness successful cases of online selling, their perceived benefits increase, strengthening their readiness. However, without addressing structural barriers, this readiness may remain aspirational rather than actionable.

CONCLUSION

It is evident that there is a significant production capability among the farming community on Guimaras Island, diverse agricultural products, and heightened awareness regarding the use of online marketing tools. Nevertheless, despite their readiness for online marketing, the implementation of the same faces serious structural challenges. These challenges range from issues relating to transaction safety, poor payment mechanisms, inefficient logistics, and inadequate ICT infrastructure.

The findings emphasize that digital transformation in agricultural marketing extends beyond technological awareness and requires an enabling ecosystem that supports safe, efficient, and accessible market participation. Farmers' continued reliance on traditional marketing systems reflects not resistance to innovation, but rational responses to perceived risks and operational limitations.

For increasing the adoption rate of digital marketing, efforts should be concentrated on improving support systems such as security of digital platforms, forming cooperatives among farmers to gather products, betterment in the packaging and transport system, and providing more internet access to rural areas.

Overall, the study highlights the need for an integrated approach that combines technological innovation, policy support, and capacity-building initiatives to empower farmers and ensure their effective participation in digital agricultural markets.

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