

# Evaluating Attendance Methods on IPB-Mobile for Student Application: A Case Study in IPB University

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## ABSTRACT

Currently, education is a crucial aspect of life. Technology has led to adaptations across various sectors, including higher education. One of these adaptations is the emergence of online attendance recording systems. IPB University has responded seriously to this by launching the IPB-Mobile for Student for Student app, which is equipped with a mobile-based self-attendance feature. Students can easily mark their attendance with just one click. However, this convenience is sometimes misused; one of the problems is students marking their attendance without attending classes. This issue has prompted a study into the effectiveness of the online attendance system in IPB-Mobile for Student for Student. Through the use of Short Versions of User Experience Questionnaires (UEQ-S) and interviews, it was found that the online attendance system is quite effective. Still, there is one aspect that makes this application quite complicated, thus requiring further updates.

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## I. INTRODUCTION

Education is an essential aspect of life, where teaching and learning methods must adapt to the existing needs. Online learning is a form of adapting educational systems worldwide [1]. Especially in higher education, learning and teaching methods have greatly changed as an adaptation and technological innovation [2]. Universities worldwide increasingly recognize mobile apps' potential to improve efficiency and student engagement. To support this, it's essential to acknowledge that mobile devices are common and have great potential in mobile learning [3]. Mobile apps provide easy and quick solutions for various administrative needs, including student attendance recording. This reflects a global trend where higher education is increasingly adopting mobile technology to support academic administration and improve student learning experiences.

IPB-Mobile for Student, an app developed by IPB University in Indonesia, stands out as a specific example of using mobile apps in attendance management. The app provides attendance recording features, allowing students to record their attendance online by clicking the attendance button or scanning the attendance QR. With online attendance, students can improve their discipline and responsibility [4], while academic staff can manage and monitor attendance in real time.

Effective attendance methods in higher education are vital in increasing student engagement and learning outcomes. Previous study states that attendance methods in higher education are very important because by attending class, students have greater potential to gain knowledge that can improve their exam scores [5]. This presence doesn't have to be face-to-face; academic improvement can be observed as long as students can attend classes, whether synchronously or asynchronously, [6]. The presence of an online attendance system has made it easier and more efficient for educators to

monitor and record student attendance due to the reduced time required [7]. Therefore, efficient attendance methods enhance student engagement and contribute to overall better learning outcomes. However, there are concerns that this efficiency might distract students. Students could potentially pretend to be present. It is admitted that enforcing discipline can be challenging, but this is the challenge that must be faced [8]. Therefore, choosing the right attendance method should consider balancing accuracy, efficiency, and user acceptance, considering the educational environment's specific needs and characteristics.

A Short Version of the User Experience Questionnaire (UEQ-S) is a questionnaire to measure the user's experience of products [9]. It was distributed to students at IPB University, and an interview was conducted with one of the lecturers to determine the preferences and effectiveness of attendance methods in IPB-Mobile for Students. The utilization of UEQ-S as a benchmark has been previously conducted in various contexts, such as the Batik 4.0 Mobile Application, Virtual Reality in firefighter training, and evaluating remote control in vehicles [10], [11], [12]. This makes UEQ-S suitable for assessing the effectiveness of the attendance system in IPB-Mobile for Students.

This study aims to evaluate the attendance methods on the IPB-Mobile for Student application. The findings from this study will contribute to innovations in identifying the most effective attendance methods suitable for students at IPB University. The findings will also impact educators in shaping high-quality students with discipline and high knowledge.

## II. METHODS

The study uses the UEQ-S to collect empirical data on the IPB-Mobile for Student attendance system. Additionally, interviews will be conducted with lecturers to gather their perspectives on the matter. This qualitative component seeks insights from the faculty's standpoint, complementing the quantitative data obtained through the UEQ-S. By incorporating both quantitative and qualitative approaches, the study aims to comprehensively understand student preferences and faculty perspectives regarding attendance systems within IPB-Mobile for Students.

### A. Data Collection Procedures and Population

This study's reference version of IPB-Mobile for Student for Student is version 3.1.6. The respondents were IPB University students utilizing IPB-Mobile for Students as their attendance tool. The UEQ-S was distributed to respondents using a random sampling method. Data collection was extensively disseminated through WhatsApp and Facebook by sharing a link to complete the study questionnaire connected to the UEQ-S link. After filtering out duplicate data and inappropriate responses, 56 responses were obtained.

In addition to the student participants, the target participants for the interviews were lecturers who teach at the Software Engineering Technology Program, Department of Vocational Studies, IPB University. These interviews were conducted to gather insights and perspectives from the academic staff regarding the existing attendance system for

students at IPB-Mobile and to obtain input and suggestions from their standpoint. The interviews focused on their experiences according to the UEQ-S categories, especially effectiveness with the current attendance system, challenges they may face, and their views on potential improvements, including implementing the QR Code scanning feature.

### B. Data Analysis

The quantitative instrument used in this study is a questionnaire based on the UEQ-S guidelines, consisting of two aspects for identification, and eight items will be discussed [9]. Furthermore, questions are included to confirm that respondents are indeed students of IPB University. Respondents are also required to provide personal data to evaluate the distribution of the questionnaire and respondent demographics.

The interviews were conducted both face-to-face and online, depending on availability, and aimed to understand perceptions of the current attendance system and expectations for improvements. Findings will inform recommendations for IPB-Mobile for Student's future development. The questionnaire data will be processed using the UEQ-S data analysis tools, considering clarity, reliability, efficiency, engagement, and novelty. On the other hand, interview data will be highlighted for its important points. Combining both sets of data ensures more accurate insights from students and lecturers.

## III. RESULT AND DISCUSSION

### A. Distribution of Respondent Questionnaires

Before discussing the results of the user experience evaluation attendance methods in the IPB-Mobile for Students, the data collection involved classification based on educational strata and academic year. Thus, the study results regarding the evaluation of attendance methods in IPB-Mobile for Students are expected to reflect diverse perspectives.

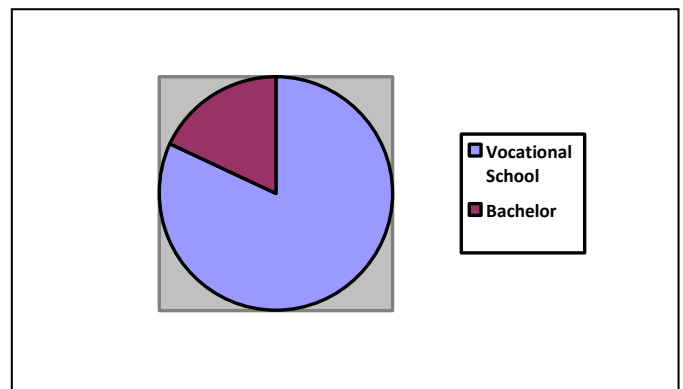


Fig. 1. Respondent Strata Distribution

Figure 1 represents the distribution of respondents from various strata at IPB University. Of the total respondents, 18% (n=10) are bachelor's degree students, indicating a significant representation from this academic stratum. The remaining 82% (n=46 respondents) of respondents are vocational

students, highlighting the predominant presence of students from vocational programs in the sample.

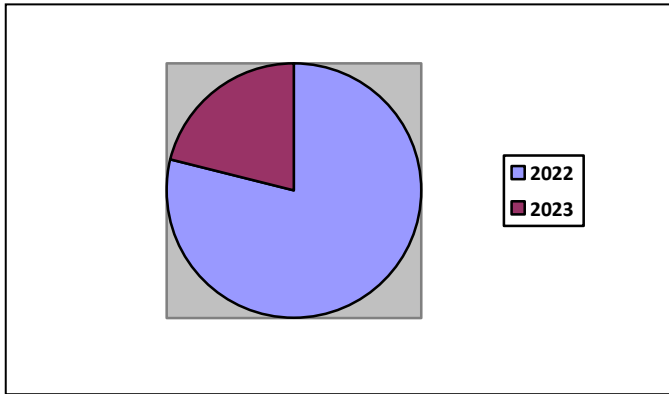


Fig. 2. Respondent Academic Year Distribution

Figure 2 represents the distribution of respondents by academic year. Furthermore, within the respondent pool, it's noteworthy that 21% (n=12 respondents) are students from the academic year 2023, while the majority, constituting 79% (n=44 respondents) of the respondents, are students from the academic year 2022. This distribution offers insights into the representation of different cohorts within the surveyed population.

**B. Evaluation of IPB-Mobile for Student Self-Attendance Feature Using the UEQ-S Method**

The results from the collection of UEQ-S questionnaires encompass eight items and two scales, pragmatic and hedonic quality.

TABLE I. THE SHORT VERSION OF UEQ

Item	Obstructive	Supportive	Scale
1	o o o o o o o o	Supportive	Pragmatic Quality
2	o o o o o o o o	Easy	
3	o o o o o o o o	Efficient	
4	o o o o o o o o	Clear	
5	o o o o o o o o	Exiting	Hedonic Quality
6	o o o o o o o o	Interesting	
7	o o o o o o o o	Inventive	
8	o o o o o o o o	Leading edge	

The UEQ-S comprises elements depicted in Figure 1. The first four items are representations of the pragmatic quality scale, while the last four pertain to the hedonic quality scale. The EUQ-S method processes variables to assess quality, namely attractiveness, pragmatic, and hedonic. The pragmatic quality aspect relates to clarity, efficiency, and accuracy. The hedonic quality aspect relates to stimulation and novelty [9].

TABLE II. THE UEQ-S VARIABLE RESULT BASED ON QUESTIONS ITEMS

Item	Mean	Variance	Std. Dev	UEQ-S Scales	
1	2,6	0,7	0,8	Dependability	
2	0,3	5,7	2,4	Perspicuity	Pragmatic Quality
3	1,9	1,7	1,3	Efficiency	
4	1,7	1,6	1,3	Perspicuity	
5	1,8	1,6	1,3	Stimulation	Hedonic Quality
6	1,8	1,3	1,2	Stimulation	
7	1,4	1,8	1,3	Novelty	
8	1,1	3,2	1,8	Novelty	

The results in Table 2 present the mean, variance, standard deviation, and UEQ-S scales of each UEQ-S scale for each question item. If the mean value is greater than 0.8 (> 0.8), it indicates a positive evaluation. If the mean falls within the range of -0.8 to 0.8, it indicates a neutral evaluation. Meanwhile, if the mean is below -0.8 (< -0.8), it signifies a negative evaluation. Based on the mean results from 8 question items, all questions are expressed positively except for item 2, which was declared negative for the perspicuity variable.

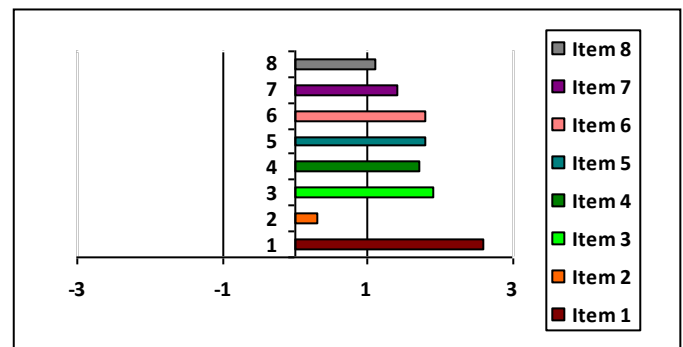


Fig. 3. Mean Value per Item

Figure 3 shows a clearer overview of each item. The scale ranges from -3 (horribly bad) to +3 (extremely good). The first item approaches the highest average, near +3, with a total average of 2.6. This indicates that the presence of IPB-Mobile for Students is highly supportive of supporting attendance data for each student, especially supporting attendance data that will influence the final assessment of each student.

This aligns with a previous study, which found that students form three distinct groups: 1) those who drop out before the final exam, 2) those who attend classes and exams, and 3) those who study independently and attend exams. The study concludes from group 2 that attendance correlates positively and significantly with performance after controlling for the effects of other variables potentially related to performance [13]. Therefore, this should already motivate students to attend classes and as a consideration for lecturers to consistently build an insightful discussion forum relevant to the learning outcomes.

Conversely, the second item shows an average approaching 0, with a total average of 0.3. This indicates that many students find the IPB-Mobile for Student presence complicated. Students highlighted challenges during attendance, inadvertently skipping attendance from previous classes due to the lack of clarity on missed classes. This causes students to need to look for attendance for each class individually. Several student concerns emerged regarding the timeliness of lecturers in opening attendance. Lastly, there were frequent instances where students had difficulty accessing attendance.

A related study encountered similar challenges in evaluating the operation of Mobile Attendance conducted by the Department of Education, Youth, and Sports of Gunungkidul Regency. These challenges include errors in the operation (software malfunctions), internet connectivity issues, failure to display coordinates (administrative oversight), and user-related challenges (forgetting to do attendance for both entry, exit, and official duties) [14]. This illustrates that the deficiencies of an application stem not simply from the application itself but also user negligence.

The third to eighth items have average ranges above +1 and below +2. This indicates average good outcomes from respondents.

TABLE III. BENCHMARK

Scale	Mean	Comparison to Benchmark	Interpretation
Pragmatic Quality	1,65	Good	10% of results better, 75% of results worse
Hedonic Quality	1,55	Good	10% of results better, 75% of results worse
Overall	1,60	Excellent	In the range of the 10% best results

The average results for each scale are presented in Table 3. The pragmatic quality scale produced an average score of 1.65, labeled as "Good," while the hedonic quality scale generated an average score of 1.55, also labeled as "Good." Consequently, the overall average score for both scales, at 1.60, is labeled "Excellent." In summary, the results demonstrate that both the pragmatic and hedonic quality scales performed well, individually earning a "Good" rating. When considered together, they reflect an overall assessment of excellence, indicating a high level of quality.

In Figure 4, a graphical representation illustrates that the average scores for pragmatic quality are categorized as "good," while the scores for hedonic quality are also categorized as "good," with the overall score falling into the "excellent" category. In conclusion, the graphical representation in Figure 4 illustrates that the average scores for pragmatic quality and hedonic quality are categorized as 'good,' with the combined overall score falling into the 'excellent' category. This finding underscores the high quality exhibited by the evaluated criteria, highlighting the effectiveness of the assessment methods employed in this study.

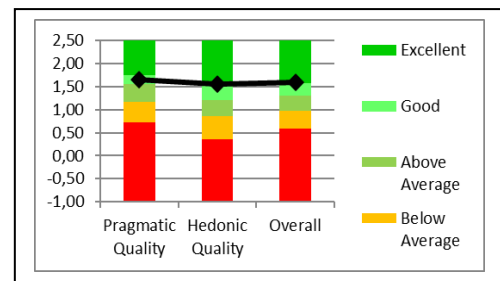


Fig. 4. Benchmark Chart

### C. Evaluation of IPB-Mobile for Student Attendance Method Based on Lecturer Interviews

In addition to exploring the user experience through the evaluation of IPB-Mobile for Student attendance from students' perspectives using UEQ-S, this study delves into insights gathered from interviews regarding the experience of IPB-Mobile for Student for attendance record system, particularly from the standpoint of lecturers. In this exploration, two lecturers will serve as interviewees, offering perspectives on the experience and challenges of the attendance system.

TABLE IV. BENCHMARK

Excerpt	Category
Lecturer A acknowledges that self-attendance via the IPB-Mobile app for students is convenient, yet occasionally resorts to manual attendance (calling out each student's name) as a validation step.	Effectiveness
In contrast, Lecturer B asserts that attendance via the mobile app has demonstrated greater effectiveness than manual methods.	
Lecturer A states that the downside of self-attendance is negligence. On the lecturers' side, they sometimes forget to open access to the Examination Report, while on the students' side, they forget to fill in their attendance.	Disadvantages
Lecturer B said that the time-consuming of filling out the main topics of each meeting report is one of the disadvantages.	
Lecturer A recalls that before the COVID-19 pandemic, students utilized QR code scanning for attendance tracking but still favored manual attendance due to its ability to foster personal connections with students.	Alternative Option
On the other hand, Lecturer B acknowledges a lack of prior socialization regarding using QR code-based attendance. However, they express confidence in displaying the QR code on the classroom screen, ensuring that only attending students can access and fill in their attendance.	

Table 4 indicates three discussion categories. Lecturer A acknowledges the convenience of self-attendance via IPB-Mobile for Students, especially with disciplined students, but still prefers manual attendance for its validation aspect. Lecturer A identifies negligence as a downside of self-attendance, where lecturers and students may overlook essential actions. While Lecturer A recognizes the efficiency of online attendance, she values the personal connections

fostered by manual attendance. Despite mentioning QR code scanning as a pre-pandemic option, she emphasizes the importance of maintaining interpersonal interactions in education.

On the other hand, Lecturer B asserts that attendance through IPB-Mobile for Student has demonstrated effectiveness compared to traditional manual methods, although random checks may still be necessary. Despite occasional network constraints and the time-consuming nature of filling out meeting reports, IPB-Mobile for Student remains practical, with its attendance-related features reducing the need for direct academic engagement. Regarding alternative options, Lecturer B suggests the potential effectiveness of QR code-based attendance, although acknowledging challenges in its current implementation due to the lack of prior socialization and potential difficulties in creating QR codes.

However, several studies have indicated that QR code-based attendance systems can prove effective. Implementing an online student attendance monitoring system utilizing QR codes and mobile devices makes it easier to quantitatively differentiate students based on their attendance diligence [15]. QR code-based attendance applications can potentially mitigate student cheating in recording attendance during classroom lectures. This system facilitates the attendance recapitulation process, making it more efficient for lecturers. Moreover, this application allows students to conveniently monitor and track their attendance records [16].

Although QR code functionality is available for students on IPB-Mobile, it remains a seldom-used method for classroom attendance. This suggests that despite its current underutilization, QR codes hold promise as a viable alternative for attendance tracking. It could be considered for permanent integration into IPB University's systems. Further exploration of QR code potential as an efficient and effective attendance method could significantly contribute to attendance management in academic environments.

#### IV. CONCLUSION

Based on the analysis using the UEQ-S method on IPB University students and interviews with lecturers to evaluate the presence of the IPB-Mobile for Students method, it can be concluded that the application is effective enough in carrying out its tasks of recording student attendance. In the results and discussion, 7 out of 8 questions got positive responses from respondents, with an average of more than +1. This is still in line with the results of interviews with lecturers who acknowledge the effectiveness of IPB-Mobile for Students as a student attendance application. Despite its effectiveness, IPB-Mobile for Students still has some shortcomings that need to be improved. This creates an opportunity for other attendance options, namely QR code-based, which have the potential to fill the gaps in the independent attendance method of IPB-Mobile for Students.

#### REFERENCES

- [1] L. Mishra, T. Gupta, and A. Shree, "Online Teaching-Learning in Higher Education during Lockdown Period of COVID-19 Pandemic," *Int. J. Educ. Res. Open*, vol. 1, p. 100012, 2020. [Online]. Available: <https://doi.org/10.1016/j.ijedro.2020.100012>.
- [2] A. Saykili, "Higher Education in The Digital Age: The Impact of Digital Connective Technologies," *J. Educ. Technol. Online Learn.*, vol. 2, pp. 1-15, 2019. [Online]. Available: <https://doi.org/10.31681/jetol.516971>.
- [3] J.-M. Romero-Rodríguez, I. Aznar-Diaz, F. Hinojo-Lucena, and G. García, "Mobile Learning in Higher Education: Structural Equation Model for Good Teaching Practices," *IEEE Access*, pp. 1-1, 2020. [Online]. Available: <https://doi.org/10.1109/ACCESS.2020.2994967>.
- [4] S. Safuan and D. Rahman, "Penerapan Sistem Absensi Online Berbasis Android (Studi Kasus Pada Kantor Pemerintah Daerah Kabupaten Majalengka Jawa Barat)," *JTEKSIS*, vol. 3, no. 1, pp. 267-275, Jan. 2021.
- [5] T. Fadelelmoula, "Impact of class attendance on student performance," *Int. Res. J. Med. Med. Sci.*, 2018. [Online]. Available: <https://doi.org/10.30918/IRJMMS.62.18.021>.
- [6] J. Nieuwoudt, "Investigating synchronous and asynchronous class attendance as predictors of academic success in online education," *Australas. J. Educ. Technol.*, pp. 15-25, 2020. [Online]. Available: <https://doi.org/10.14742/ajet.5137>.
- [7] Md Islam, Md Hasan, Md Billah, and Md Uddin, "Development of Smartphone-based Student Attendance System," in *Proceedings of the IEEE Region 10 Humanitarian Technology Conference (R10-HTC), 2017*, pp. 1-4. [Online]. Available: <https://doi.org/10.1109/R10-HTC.2017.8288945>.
- [8] R. J. Weijers, L. Ganushchak, K. Ouwehand, and B. B. de Koning, "I'll Be There: Improving Online Class Attendance with a Commitment Nudge during COVID-19," *Basic Appl. Soc. Psychol.*, vol. 44, no. 1, pp. 12-24, 2022. [Online]. Available: <https://doi.org/10.1080/01973533.2021.2023534>.
- [9] M. Schrepp, A. Hinderks, and J. Thomaschewski, "Design and Evaluation of a Short Version of the User Experience Questionnaire (UEQ-S)," *Int. J. Interact. Multimedia. Artif. Intell.*, vol. 4, pp. 103, 2017. DOI: 10.9781/ijimai.2017.09.001.
- [10] Schrank, A., Walocha, F., Brandenburg, S., & Oehl, M. (2024). Human-centered design and evaluation of a workplace for the remote assistance of highly automated vehicles. *Cognition, Technology & Work*, 1-24. DOI: 10.1007/s10111-024-00753-x.
- [11] Wheeler, S., Hoermann, S., Lukosch, S., & Lindeman, R. (2024). Design and assessment of a virtual reality learning environment for firefighters. *Frontiers in Computer Science*, 6, 1274828. DOI: 10.3389/fcomp.2024.1274828.
- [12] Suparmanto, N., Asih, A., Sudiarmo, A., & Santosa, P. (2024). Interface design features and evaluation of batik 4.0 mobile application. *Indonesian Journal of Electrical Engineering and Computer Science*, 33, 1604-1619. DOI: 10.11591/ijeecs.v33.i3.pp1604-1619.
- [13] A. Lukkarinen, P. Koivukangas, and T. Seppälä, "Relationship between Class Attendance and Student Performance," *Procedia - Social and Behavioral Sciences*, vol. 228, pp. 341-347, 2016. DOI: 10.1016/j.sbspro.2016.07.051.
- [14] P. P. Widy, "EVALUASI PENGOPERASIAN MOBILE PRESENSI DI DINAS PENDIDIKAN PEMUDA DAN OLAHRAGA KABUPATEN GUNUNGKIDUL," *Hanata Widya*, vol. 8, no. 3, pp. 33-43, 2019.
- [15] A. A. Abd Rahni, N. Zainal, M. Z. Adna, N. E. Othman, and M. F. Bukhori, "Development of the online student attendance monitoring system (SAMSTM) based on QR-codes and mobile devices," *J. Eng. Sci. Technol.*, vol. 10, pp. 28-40, 2015.
- [16] Y. Supendi, Y. Yiyi, I. Supriadi, and A. A. W. Isto, "Pemanfaatan Teknologi QR-Code Pada Sistem Presensi Mahasiswa Berbasis Mobile," in *SEMINAR NASIONAL APTIKOM (SEMNASSTIK) 2019*, pp. 550-558, 2019.