Quantifying the Usability of a Learner Data Management System: A Descriptive Analysis of Perceived Usefulness, Perceived Ease of Use, and Intention to Use

Romeo, Jr. E. Bejar[1], Odessa A. Arciso[2], Mark Van M. Buladaco[3]

[1]Teacher III, Department of Education, Region XII, Cotabato Division

[2]Teacher III, Department of Education, Region XII, Sarangani Division

[3]Dean, Institute of Computing, Davao del Norte State College

ABSTRACT

Lamlifew IP Integrated School, situated at Barangay Datal Tampal, Malungon, Sarangani Province, used Dess Application Program (DAP), an innovative application to address problems encountered among teachers in learners' data management. This study aimed to measure the usability of DAP. The focus was on assessing perceived usefulness, perceived ease of use, and intention to use as key usability indicators based on the Technology Acceptance Model (TAM). The study had 127 respondents. Weighted mean ($\bar{X}$) was used as the statistical tool. The findings of this study suggest that the DAP implemented at Lamlifew IP Integrated School was perceived as highly useful, easy to use, and strongly encouraged the intention to use among the respondents. It is recommended that Lamlifew IP Integrated School should continue to use DAP in learners' data management, improve the school's IT infrastructure, provide ongoing training and support for teachers and students, and allocate sufficient resources to maintain and upgrade the DAP.

INTRODUCTION

- Background

A learner data management system (LDMS) is a tool that can be used to manage and analyze data related to learners' profiles, behavior, and performance. It may include an intelligent dashboard for students and teachers to access important data [1] and integrates formal and informal experiences to enhance personalization and interoperability [2].

The learner data management system ensures time and work resource economy as well as quick data acquisition [3], delivers timely and continuous feedback systematically [4], and becomes a useful source of information for management and decision-making [5]. Data management systems have benefits for education in the Philippines. Matias and Timosan [6] found that teachers have a positive attitude toward the learner information system, which manages learner information and improves collaboration among personnel in the Department of Education. Purcia [7] found that digitizing academic records can improve student registration and records management services of private schools in the Philippines. Patimo and Maribojoc [8] found that an electronic records management system can make searching for records faster than manual processes.

Lamlifew IP Integrated School, situated at Lamlifew, Barangay Datal Tampal, Malungon, Sarangani Province, used Dess Application Program (DAP), an innovative application to address problems encountered among teachers on learners' data management. DAP comprised various elements to ensure data security and manage important information about individual teachers, learners, and school personnel. Features included creating individual teacher accounts, storing learner information, generating learner promotion reports and permanent records, maintaining school personnel profiles, and organizing learner records by grade level.

This study aimed to objectively measure and quantify the usability of DAP. The focus was on assessing perceived usefulness, perceived ease of use, and intention to use as key usability indicators based on the Technology Acceptance Model (TAM). This study used descriptive analysis as a research design to understand and quantify the respondents' perceptions of usability. This involved collecting data from respondents who used the DAP through survey questionnaires assessing their perceived usefulness, perceived ease of use, and intention to use.

- Statement of the Problem

Generally, this study sought to measure the usability of DAP, a learner data management system. Specifically, it answered the following questions:

1. What is the perceived usefulness of DAP in Lamlifew IP Integrated School?
2. What is the perceived ease of use of DAP in Lamlifew IP Integrated School?
3. What is the level of intention to use DAP in Lamlifew IP Integrated School?
4. Review of Related Literature

The LDMS is an essential tool in educational settings for managing and organizing student information. To ensure its effectiveness and user acceptance, it is crucial to understand the factors that influence its usability. Usability is a measure of a product that has been used in a specific scenario by specific users and can achieve the special goal satisfactorily and effectively [9].

Numerous studies have investigated the perceived usefulness of LDMSs, focusing on the benefits that users associate with these systems. LDMSs enhance users' work efficiency [10], support data-driven decision-making [11], and streamline administrative tasks [12]. When users perceive systems or mobile applications as valuable tools, they are more likely to find them useful [13].

The perceived ease of use is an essential factor that impacts the usability of LDMSs, and the electronic system in general. Studies have highlighted the significance of user-friendly interfaces [14], intuitive design [15], and straightforward navigation [16] in enhancing users' perception of the system's ease of use. Computer playfulness [17], information quality [18], and the perception of convenience [19] have also been found to positively influence the perceived ease of use of LDMSs and other systems. Users who find LDMSs easy to learn and operate are more likely to engage with the system.

Understanding users' intention to use LDMSs is crucial for predicting their adoption behavior. Previous research has identified several factors influencing users' intention to use LDMSs. These include perceived usefulness, perceived ease of use, and social norm [20]. Additionally, factors such as system features (i.e., accessibility, relevance, and system help), interface features (i.e., screen design, navigation, and term), and individual differences (i.e., performance expectancy, domain knowledge, and social influence) [21] play significant roles in shaping users' intention to use systems, including mobile applications and LDMSs.

- Theoretical Framework

This study was grounded in the widely recognized Technology Acceptance Model (TAM), which provides a solid theoretical framework for understanding users' acceptance and adoption of technology.

The Technology Acceptance Model (TAM) [20] was developed by Fred Davis in 1989 as part of his doctoral dissertation. TAM has emerged as a highly influential model in technology acceptance, highlighting two key factors that shape an individual's intention to use new technology: perceived ease of use and perceived usefulness.

Perceived usefulness was defined as the individual's perception of the extent to which the use of a given technology improves performance [20]. Perceived ease of use was defined as the degree to which a person believes using a particular system is free of effort [20].

While perceived ease of use influences perceived usefulness, both perceived usefulness and perceived ease of use play a role in influencing the behavioral intention to use. Behavioral intention to use was defined as the degree to which a person has formulated conscious plans to perform or not perform some specified future behavior [21]. This means that users' intention to use technology increases when they perceive it as both useful and easy to use.

- Conceptual Framework

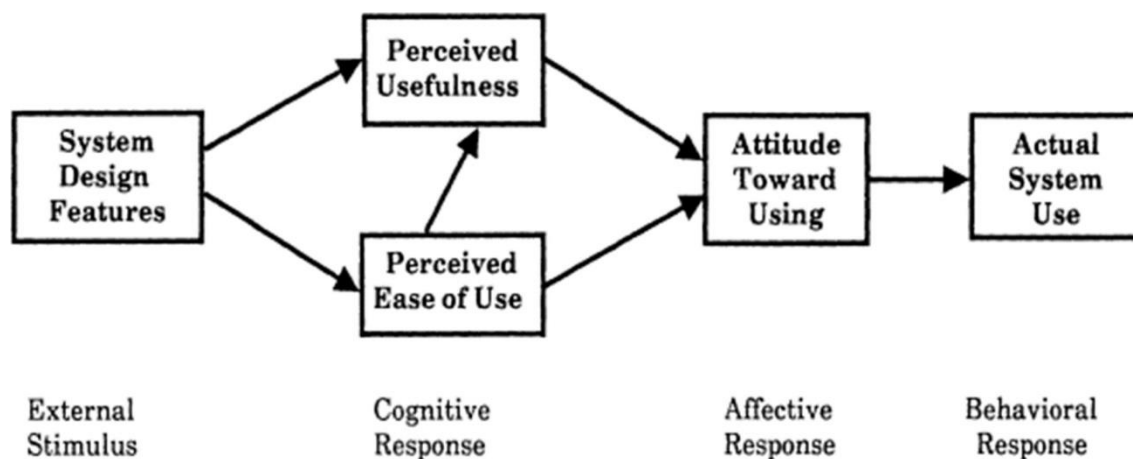The following figure below provides the conceptual framework for this study.

Fig. 1 The Phases in Technology Acceptance Model (TAM)

According to TAM, the acceptance of technology follows a three-stage process, where external factors (system design features) elicit cognitive responses (perceived ease of use and perceived usefulness), leading to an affective response (attitude towards technology and intention), which ultimately influences the behavioral use of the technology [22], [24]. Moreover, perceived ease of use influences perceived usefulness but not vice versa [23].

This study specifically centered on descriptively examining the perceived usefulness, perceived ease of use, and intention to use the DAP. The analysis of the relationships between these constructs was not included as part of the study's scope.

METHODOLOGY

- Research Design

The study employed a descriptive-quantitative method in quantifying the usability of DAP. The focus was on assessing perceived usefulness, perceived ease of use, and intention to use as key usability indicators.

In data gathering, relevant records such as the Learner's Profile, Checklist for Learners, Report for Learners' Promotion, Learner's Permanent Academic Records, and List of School Personnel were used for document analysis. Survey tools, as an instrument with the help of the Technology Acceptance Model (TAM), were used for research analysis.

Moreover, this research design which determined the usefulness and ease of use perceived by the respondents and the intention to use DAP gave sufficient data to accept the program for future use.

- **Research Locale**

This study was conducted in Lamlifew IP Integrated School, Barangay Datal Tampal, Malungon, Sarangani Province.

The school encountered numerous obstacles, including the unavailability of internet connectivity, inadequate technological infrastructure, and insufficient technical proficiency among both teachers and students.

- **Research Respondents**

Lamlifew IP Integrated School accommodated a faculty of 20 nationally and locally funded teachers and a student population of 121 at the junior high school level. As the school year ended last July 7, 2023, only 107 students agreed to participate in this study: 26 from Grade 7, 20 from Grade 8, 34 from Grade 9, and 27 from Grade 10. Hence, the study had a respondent count of 127 in total.

- **Research Instrument**

The table below shows the research instrument used to rate respondents' experience using the DAP. It was adapted from Lewis [25] and Rigopoulos et al. [26]. Scales 5, 4, 3, 2, and 1 pertain to Strongly Agree, Agree, Neutral, Disagree, and Strongly Disagree, respectively.

TABLE I SURVEY QUESTIONNAIRE

	5	4	3	2	1
Perceived Usefulness					
1. Using DAP in my job enables me to accomplish tasks more quickly.					
2. Using DAP improves my job performance.					
3. Using DAP in my job increases my productivity.					
4. Using DAP enhances my effectiveness on the job.					
5. Using DAP makes it easier to do my job.					
6. I have found DAP useful in my job.					
Perceived Ease-of-Use					
7. Learning to operate DAP was easy for me.					
8. I found it easy to get DAP to do what I want to do.					
9. My interaction with DAP has been clear and understandable.					
10. It found DAP to be flexible to interact with.					
11. It was easy for me to become skillful at using DAP.					
12. I found DAP easy to use.					
Behavioral Intention to Use					

13. I think that using DAP is a good idea.					
14. I think that using DAP is beneficial for me.					
15. I have a positive perception about using the DAP.					

- Data Gathering Procedure

The research study followed the process wherein the teachers and students were the program's primary users. The letter seeking permission to conduct the study was submitted to the school head of Lamlifew IP Integrated School. Next, the orientation was held, presenting, as well, the involvement and participation of the respondents in the manipulation of DAP.

In the implementation, respondents were given enough time to explore, learn, and test the process of DAP. Lastly, the respondents took time to rate their experiences as to their perceived usefulness, perceived ease of use, and intention to use DAP.

- Statistical Tool

Weighted mean ($\bar{x}$) was used to determine the perceived usefulness, perceived ease of use, and intention touse DAP. The formula for calculating the weighted mean is

$$\bar{x} = \frac{\sum f_x}{N}$$

where:

$\bar{x}$ = weighted mean

f_x = weighted frequency of response obtained by multiplying the weight for each item in the scale

N = number of respondents

The table below shows the interpretation of the 5-point Likert scale measurements.

TABLE II LIKERT SCALE INTERPRETATION

Likert-Scale Description	Likert-Scale	Likert Scale Interval
Strongly Agree	5	4.21 – 5.00
Agree	4	3.41 – 4.20
Neutral	3	2.61 – 3.40
Disagree	2	1.81 – 2.60
Strongly Disagree	1	1.00 – 1.80

- Ethical Considerations

The researchers ensured ethical concerns were addressed in the study to ensure ethical procedure. Emphasis was placed on maintaining strict confidentiality when handling the gathered data.

The researchers prepared a survey questionnaire stating the purpose of the study and voluntary participation

in the study, which was presented to the respondents.

The researchers demonstrated their commitment to academic integrity by meticulously following the research procedure and maintaining the study's rigor. Additionally, proper attribution was given to authors whose writings, opinions, and ideas were referenced in the study through accurate citations in the reference list.

RESULTS AND DISCUSSION

1. Perceived Usefulness of DAP in Lamlifew IP Integrated School

The table below shows the perceived usefulness of DAP in Lamlifew IP Integrated School.

TABLE III PERCEIVED USEFULNESS OF DAP

Indicators	Weighted Mean	Interpretation
1. Using DAP in my job enables me to accomplish tasks more quickly.	4.80	Strongly Agree
2. Using DAP improves my job performance.	4.68	Strongly Agree
3. Using DAP in my job increases my productivity.	4.64	Strongly Agree
4. Using DAP enhances my effectiveness on the job.	4.63	Strongly Agree
5. Using DAP makes it easier to do my job.	4.69	Strongly Agree
6. I have found DAP useful in my job.	4.76	Strongly Agree
Overall Weighted Mean	**4.70**	**Strongly Agree**

Table III shows the perceived usefulness of DAP in Lamifew IP Integrated School. Indicator 1 obtained a weighted mean of 4.80, interpreted as Strongly Agree; indicator 2 with 4.68, interpreted as Strongly Agree; indicator 3 with 4.64, interpreted as Strongly Agree; indicator 4 with 4.63, interpreted as Strongly Agree; indicator 5 with 4.69, interpreted as Strongly Agree; and indicator 6 with 4.76 interpreted as Strongly Agree. The results revealed that respondents strongly agreed that DAP enabled them to accomplish their tasks more quickly, as reflected by the highest weighted mean of 4.80. Additionally, respondents strongly agreed that using DAP improved their job performance, increased productivity, enhanced job effectiveness, and strengthened job convenience. They also strongly agreed that DAP was useful in their job, as reflected by the weighted mean of 4.76.

Table III also indicates that the overall weighted mean was 4.70, interpreted as Strongly Agree. This suggests that the respondents strongly agreed on the perceived usefulness of DAP in Lamlifew IP Integrated School. This implies that DAP can improve the overall student information management performance.

- Perceived Ease of Use of DAP in Lamlifew IP Integrated School

The table below shows the perceived ease of use of DAP in Lamlifew IP Integrated School.

TABLE IV PERCEIVED EASE OF USE OF DAP

Indicators	Weighted Mean	Interpretation
7. Learning to operate DAP was easy for me.	4.65	Strongly Agree
8. I found it easy to get DAP to do what I want to do.	4.67	Strongly Agree
9. My interaction with DAP has been clear and understandable.	4.68	Strongly Agree
10. It found DAP to be flexible to interact with.	4.60	Strongly Agree
11. It was easy for me to become skillful at using DAP.	4.69	Strongly Agree

12. I found DAP easy to use.	4.65	Strongly Agree
Overall Weighted Mean	**4.65**	**Strongly Agree**

Table IV shows the perceived ease of use of DAP in Lamifew IP Integrated School. Indicator 7 obtained a weighted mean of 4.65, interpreted as Strongly Agree; indicator 8 with 4.67, interpreted as Strongly Agree; indicator 9 with 4.68, interpreted as Strongly Agree; indicator 10 with 4.60, interpreted as Strongly Agree; indicator 11 with 4.69, interpreted as Strongly Agree; and indicator 12 with 4.65 interpreted as Strongly Agree. The results revealed that respondents strongly agreed that it was easy to become skillful at using DAP as reflected by the highest weighted mean of 4.69. Additionally, respondents strongly agreed that learning to operate DAP was easy for them, and they found it easy to DAP to do what they wanted to do. Moreover, respondents strongly agreed that their interaction with DAP was clear, understandable, and flexible. They also strongly agreed that they had found DAP easy to use, as reflected by the weighted mean of 4.65.

Table IV also indicates that the overall weighted mean was 4.65, interpreted as Strongly Agree. This suggests that the respondents strongly agreed on the perceived ease of use of DAP in Lamlifew IP Integrated School. This implies that, indeed, using DAP was free of effort.

1. Intention to Use DAP in Lamlifew IP Integrated School

The table below shows the intention to use DAP in Lamlifew IP Integrated School.

TABLE V

INTENTION TO USE DAP

Indicators	Weighted Mean	Interpretation
13. I think that using DAP is a good idea.	4.65	Strongly Agree
14. I think that using DAP is beneficial for me.	4.87	Strongly Agree
15. I have a positive perception about using the DAP.	4.72	Strongly Agree
Overall Weighted Mean	**4.75**	**Strongly Agree**

Table V shows the behavioral intention to use DAP in Lamifew IP Integrated School. Indicator 13 obtained a weighted mean of 4.65, interpreted as Strongly Agree; indicator 14 with 4.87, interpreted as Strongly Agree; and indicator 15 with 4.72, interpreted as Strongly Agree. The results revealed that respondents strongly agreed that using DAP benefited them, as reflected by the highest weighted mean of 4.87. Additionally, respondents strongly agreed that using DAP was a good idea. They also strongly agreed that they had a positive perception of using the DAP as reflected by the weighted mean of 4.65.

Table V also indicates that the overall weighted mean was 4.75, interpreted as Strongly Agree. This suggests that the respondents strongly agreed on the behavioral intention to use DAP in Lamlifew IP Integrated School. This implies that, indeed, respondents had conscious plans to use DAP.

Overall, respondents perceived DAP as both useful and easy to use and had an increased intention to use it.

CONCLUSION AND RECOMMENDATION

- Findings

The results revealed that the overall weighted mean for the Perceived Usefulness of DAP in Lamlifew IP

Integrated School was 4.70, interpreted as Strongly Agree. This suggests that the respondents strongly agreed on the perceived usefulness of DAP in Lamlifew IP Integrated School.

In addition, the overall weighted mean for the Perceived Ease of Use of DAP in Lamlifew IP Integrated School was 4.65, interpreted as Strongly Agree. This also suggests that the respondents strongly agreed on the perceived ease of use of DAP in Lamlifew IP Integrated School.

Lastly, results showed that the overall weighted mean for the Intention to Use DAP in Lamlifew IP Integrated School was 4.75, interpreted as Strongly Agree. This suggests that the respondents strongly agreed on the behavioral intention to use DAP in Lamlifew IP Integrated School.

- Conclusions

In conclusion, the findings of this study indicate that the DAP implemented at Lamlifew IP Integrated School was perceived as highly useful, easy to use, and strongly encouraged the intention to use among the respondents. The overall weighted mean scores for the Perceived Usefulness, Perceived Ease of Use, and Intention to Use DAP were significantly high, indicating a consensus among the respondents that the DAP is valuable, user-friendly, and motivates their intention to utilize it in learners' data management. These results suggest a positive reception and acceptance of the DAP within the school community, highlighting its potential by providing a useful tool that is easy to navigate and aligns with the users' intentions and needs.

- Recommendations

Based on the findings and conclusions of this study, several recommendations can be made to further enhance the usability of DAP at Lamlifew IP Integrated School.

First and foremost, it is recommended that Lamlifew IP Integrated School continues to use DAP in learners' data management. The strong agreement among respondents regarding the perceived usefulness, ease of use, and intention to use the DAP indicates its positive impact on learners' data management performance. Additionally, it is recommended to improve the school's IT infrastructure to support the seamless use of the DAP. Furthermore, it is also recommended to provide ongoing training and support for both teachers and students. This will ensure that all users have the necessary skills and knowledge to maximize the benefits of the DAP. Lastly, it is crucial for the school administration to allocate sufficient resources for the maintenance and upgrading of the DAP. Regular updates and improvements to the platform will ensure its relevance and usability in the long term.

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