COURSE MANAGEMENT SYSTEM AND ITS ACCEPTABILITY

LEO S. VILLAHERMOSA
JOSE MARIA S. GARCIA II

ABSTRACT

Technology and innovation are recognized as key factors of success for the development of society. Thus, the Course Management System (CMS) is developed to ease the teaching-learning process. This study determines the acceptability of the developed CMS utilizing the descriptive-correlational research design. There are 194 respondents of the study aided with a modified questionnaire. The findings revealed that the developed CMS is highly acceptable. However, the acceptability of the CMS is not dependent with its development. The researchers conclude that the integration of technology in the delivery of lesson and in the assessment process greatly contributes to the quality of learning experiences.

KEYWORDS: *Technology, K-12 Curriculum, Technology Acceptance Model*

INTRODUCTION

Economic growth increased caused by new technology leads to mass productivity and international competitiveness. Technological devices become faster and smarter. The multicultural sensitivity has been enhanced. Access to email and internet makes learning interactive while people from different cultures and countries broadened their knowledge and experiences. The modifications in technological trends and with all the opportunities that technology has to offer motivate and encourage the researchers for unvarying innovations and reforms particularly in education. Beth Simone Noveck says, “In the 21st century, you have to use technology as one of the tools in the toolkit to bring about social change.” Advances in technology are speeding along the human evolution greatly affecting emotional and psychological integrity.

Technology and innovation are recognized as key factors of success for the development of society [12]. In the Philippine settings, Senior High School teachers and learners are new to this technology. Being school teachers, the researchers are challenged to develop a system that needs to be adopted towards quality learning. Technological systems are sets of interconnected components that transform, store, transport, or control materials, energy, and/or information for particular purposes. Certainly, there are several approaches in the search for quality learning, yet, the researchers find it essential to have a Portable Learning Management System (PLMS) that could influence technology and enhance teaching and learning skills for teachers and students alike. Ehrenfeld[12]indicated that it is essential to assess where technological innovation research is in relation to sustainability and how it can be moved further in that direction for practical and theoretical purposes. Because most of the learning management system needs an internet connection and it was found out that the Philippines has the second lowest average, some of the issues are on the accessibility and utilization. This is considered as one of the most challenging aspects of this research. This study value the need for further intervention of a least web-based source intended for the Senior High School technological implementation. Thus, this study intends to create a Course Management System for K-12 that could enhance teaching-learning process and could sufficiently fill in the gaps so that ICT can have a significant impact on teaching and learning in Philippine schools.

Research Objectives

This research developed a Course Management System (CMS) and determined its acceptability at Mabolo National High School, Cebu City Division, during the School Year 2017-2018 towards technology adoption.

Specifically, the study sought to answer the following:

1. What is the development of CMS as to the following:
   1.1 administrator account,
   1.2 teacher account, and

1.3 student account?
2. What is the acceptability of the developed CMS as to
TAM's Construct:
2.1 perceived usefulness,
2.2 perceived ease of use,
2.3 attitude, and
2.4 behavioralintention?
3. What are the relationships between the development and the acceptability of the CMS?

METHODOLOGY

This section shows the research design, flow of the study, environment, respondent, research instrument, total population, data collection and measurement, data gathering procedure, and data analysis.

Design

The descriptive-correlation method is used in this study. It is descriptive as it involved the description, classification, analysis and interpretation. In this study, the relationship of the development and acceptability of CMS was determined.

Environment

The study was conducted inMabolo National High School of Cebu City Division. It is a public high school in the North District of the City of Cebu which offers free Secondary Education to all school-aged children of Barangay Mabolo, Careta, Hipodromo, Kasambagan and other neighboring barangays. The school was established on 1985 formerly known as Florencio Urot Memorial National High School. It is located in the center most part in Cebu City, a walking distance on most of the establishments like Malls, Banks, and Churches.
In compliance with the EFA program, the school is the pilot implementer of the Open High School Program (OHSP) — an alternative mode of Secondary Education that uses modular way of learning. It caters individual who have limited time to spend school regularly due to work, early marriage, teenage pregnancies, and other socio-economic related problems. In this program, the learner is expected to manage his own learning. At present, a number of stakeholders like Lexmark, QBE, and Qualfon Company donated computer sets and accessories to the school.

Respondents

The respondents of this study were the technology users of the K12 program of Mabolo National High School of DepEd, Cebu City Division particularly administrators, teachers, and students. There are 194 respondents of the study which is composed of four (4) administrators, 90 teachers, and 100 students. These respondents were given an implied consent prior to their participation, thus those target respondents who did not willingly participate in the study were given the chance to refuse. The population of respondents comprised of 100 percentof the administrators, 96 percent of the teachers, and 83 percentof the students. Complete enumeration or the concept of universal sampling was employed for the administrators and simple random sampling was utilized for the teachers and the students.

Instruments

The main instrument used in gathering the data was a survey questionnaire which has two (2) parts.The first part is a Likert scale consists of the development of Course Management System (CMS) which was adapted from McLeod[17]. This isa type of psychometric response scale in which the respondents specify their level of agreement to a statement typically in five points, namely: (1) Strongly disagree; (2) Disagree; (3) Neither agree nor disagree; (4) Agree; (5) Strongly agree.

The second part consists of the acceptability of CMSwhich was adapted from the Technology Acceptance Model Questionnaire [7]. The TAMis one of the models that attempted to address the process of acceptance of the

technology. This model includes four (4) factors: perceived usefulness, perceived ease of use, attitudes, and behavioral intention. Many attempts to adapt the TAM in various fields were found in literature[13, 6, 9, 22].

The modified questionnaire is tailored to fit in the desired intention. This questionnaire was validated by experts in the field of teaching and supervision. After the validation process, a dry run was conducted to the 10 non-respondents of the study which was composed of senior high school students, teachers and administrator. This is done to check the reliability of the questionnaire, thus gained a reliability coefficient of 0.727.

Data Collection

The researchers first sought permission from the Schools Division Superintendent to distribute and collect all the desired data from the school under the study. Once the permission was granted to conduct the study, the researcher then disseminated the questionnaire. With an approved letter request from the Schools Division Superintendent, a survey for the technology information and technology assessment was done. The data gathered were collated, tabulated, analyzed and interpreted.

Data Analysis

The following statistical tools were used in the analysis and interpretation of data: 1. **Weighted Mean** was used to determine the technology users – development and acceptability of CMS. 2 **Pearson's Correlation Coefficient** was used in determining the relationship between the development and acceptability of CMS. In getting correlation between two variables one variable must be dependent and the other variable is independent. The assumption of the study is that acceptability of CMS is dependent on its development.

RESULTS AND DISCUSSIONS

Development of Course Management System

Presented in the following tables are the development of CMS particularly under administrator account, teacher account, and student account. This CMS is designed to enhance technological literacy in teaching-learning process by developing a portable account for administrators, teachers, and students for perceive usefulness, perceive ease of use, attitudes, and behavioral intentions of TAM's construct which makes this entire system different from other management system.

Administrator Account

The development of CMS particularly on the administrator accountis shown in Table 1.Administrator account involves the transformation of educational system with the affirmation that these technologies make teaching and learning more engaging, interesting, inspiring, reflecting, and empowering [14]. Being visionary leaders, administrators inspire and engage stakeholders in the development, communication, and implementation of educational transformation with the use of digital and technological resources which are aligned with the shared vision. They lead in creating, promoting, and upholding digital age educational environment culture in *Digital age learning culture*. They ensure the effective use of digital tools and technological resources in meeting the diverse needs of learners and help them to be more innovative, creative, and efficient in learning. Moreover, educational administrators likewise ensure healthy and professional growth in technology fluency and integration among educators to help enhance students' learning. Furthermore, educational administrators keep themselves informed with the changes and updates in technology that are beneficial in teaching and learning.

Table 1: Development of Course Management System – administrator account

Indicators (Adapted from iSkills™ Assessment Educational Testing Services)	Weighted Mean	Interpretation
1. Manage school year	2.54	Well Developed
2. Manage school levels	2.51	Well Developed
3. Manage grading system	2.06	Developed
4. Manage sections	2.28	Developed
5. Manage subjects	2.73	Well Developed
6. Manage students	2.59	Well Developed
7. Manage teachers	2.47	Well Developed
Mean	2.45	Well Developed

Legend: Well Developed (WD) = 2.34-3.0, Developed (D) = 1.67 – 2.33, Poorly Developed (PD) =1.0 – 1.66

The development of the CMS under administrator account shows that manage school year is well developed with a weighted mean of 2.54; manage school levels is well developed with a weighted mean of 2.51; manage grading system is developed with a weighted mean of 2.06; manage sections is developed with a weighted mean of 2.28; manage subjects is well developed with a weighted mean of 2.73; manage students is well developed with a weighted mean of 2.59; and manage teachers is well developed with a weighted mean of 2.47. Moreover, the overall mean is interpreted as well developed.

This implies the respondents consider the CMS to be highly advanced with full features. However, for the development of CMS under manage grading systems and manage sections, the respondents consider the system only to be moderately developed with some features which is true based on K-12 grading system and the increases of yearly enrollment.

Teacher Account

The development of CMS under teacher account is shown in Table 2. Teacher account is on design, create, implement, promote, and model the use of technologies to enable them to teach the lessons and its contents with quality [14].

The development of the CMS under teacher account shows that it is well developed with an average weighted mean of 2.54.

Teachers' low level of confidence and lack of professional development opportunities contribute poor quality learning and there were eighty-two percent of teachers do not use computers by any means in classrooms [5].

Table 2: Development of Course Management System–teacher account

Indicators (Adapted from iSkills™ Assessment Educational Testing Services)	Weighted Mean	Interpretation
1. Manage quiz	2.60	Well Developed
2. Manage lesson plan	2.48	Well Developed
3. Manage assignment (upload file)	2.54	Well Developed
Mean	2.54	Well Developed

Legend: Well Developed (WD) = 2.34-3.0, Developed (D) = 1.67 – 2.33, Poorly Developed (PD) =1.0 – 1.66

Student Account

The development of CMS under student account is shown in Table 3. This is important to note that acquisition of knowledge is not the only reason why students go to school – developing and improving of skills are likewise the goals of the learners. Students are more guided in learning both knowledge and skills that will soon make a big contribution to the community and society. They exhibit constructive learning by generating new ideas out of the existing knowledge.

They also create, explore, and develop products with the help of technology. Students make use of a variety of technological tools and digital media to effectively converse, interact, disseminate information, communicate and collaborate with their peers to work on their school projects and other tasks. Students utilize digital and technological tools to search and select for data and information, organize process, analyze, synthesize, and evaluate information. Students likewise produce the processed reports with the aid of the digital and technological tools.

Students can further use appropriate digital and technological tools in practicing their creative and critical thinking skills to identify problems, plan, investigate, collect, process, analyze information in developing solutions to help in decision making.

Table 3: Development of Course Management System–student account

Indicators (Adapted from iSkillsTM Assessment Educational Testing Services)	Weighted Mean	Interpretation
1.Can take examination	2.62	Well Developed
2.Can download uploaded file by the teacher on the subject enrolled	2.52	Well Developed
Mean	2.57	Well Developed

Legend: Well Developed (WD) = 2.34-3.0, Developed (D) = 1.67 – 2.33, Poorly Developed (PD) =1.0 – 1.66

The development of the course management system on student account shows that it is well developed with an average weighted mean of 2.57. Students who own computers during adolescence are more likely to interact with peers through the internet and are generally more comfortable using computer technologies in college [15].

Over-all Development of Course Management System

This section shows the over-all development of Course Management System specifically on administrator account, teacher account, and student account.The results are shown in Table 4.

Table 4: Over-all development of Course Management System

Indicators (Adapted from iSkills™ Assessment Educational Testing Services)	Weighted Mean	Interpretation
Administrator Account	2.45	Well Developed
Teacher Account	2.54	Well Developed
Student Account	2.57	Well Developed
Grand Mean	2.50	Well Developed

Note. Well Developed (WD) = 2.34-3.0, Developed (D) = 1.67 – 2.33, Poorly Developed (PD) =1.0 – 1.66

The over-all features of the development of CMS are well-developed with a grand mean of 2.50, which means that the respondents consider CMS to be highly advanced in its full features.

Acceptability of Course Management System

Presented in the Tables is the acceptability of the CMS under the following: perceived usefulness, perceived ease of use, attitude, and behavioral intension.

Perceived Usefulness

The acceptability of CMS under *perceived usefulness*consists of the following statements: using CMS enables to accomplish tasks more quickly; using CMS improves performance; using CMS increases productivity; using CMS enhances effectiveness; using CMS would make job easier; and find CMS useful in job. The Table 5 shows the result of *perceived usefulness* acceptability of CMS. Many researches reaffirmed that the perceived usefulness is an important factor to refine the technology acceptance model (TAM) [8,21] The tabular reveals that under *perceived usefulness* in the acceptability of course management system, the respondents consider the statement to be acceptable as evident in the average weighted mean which is 4.05.

Table 5 Perceived usefulness

Indicators (Adapted from TAM's Construct Questionnaire)	Weighted Mean	Interpretation
PU1: Using CMS enables to accomplish tasks more quickly	3.89	Agree
PU2: Using CMS improves performance	4.06	Agree
PU3: Using CMS increases productivity	4.06	Agree
PU4: Using CMS enhances effectiveness	3.85	Agree
PU5: Using CMS would make job easier	4.24	Strongly Agree
PU6: Find CMS useful in job	4.22	Strongly Agree
Mean	4.05	Agree

Note.Strongly Agree (SA) = 4.20-5.0, Agree (A) = 3.40 – 4.19, Neutral (N) =2.60 – 3.39, Disagree (D) = 1.80 – 2.59, Strongly Disagree (SD) = 1.0 – 1.79

According to Parker [20], the purpose of learning management system is to enhance classroom teaching, centralized learning, tracking and reporting features, evaluation capabilities, easy upgrades, and simplified learning process.

Perceived Ease of Use

The acceptability of CMS under *perceived ease of use* consists of the following statements: learning to use CMS media is easy; find easy to use CMS to do what wanted to do; the interaction with CMS is clear and understandable; the interaction with CMS is clear and understandable; find CMS to be flexible to interact; it is easy to become skilful at using CMS; and find CMS easy to use.

The table 6 shows the result of the acceptability of CMS under *perceived ease of use*. It was supported by an investigation on the impact of perceived usefulness and ease of use on consumer use of the internet [18].

Table 6 Perceived ease of use

Indicators (Adapted from TAM's Construct Questionnaire)	Weighted Mean	Interpretation
PEOU1: Learning to use CMS media is easy	3.85	Agree
PEOU2: Find easy to use CMS to do what wanted to do	3.96	Agree
PEOU3: The interaction with CMS is clear and understandable	3.75	Agree
PEOU4: Find CMS to be flexible to interact with	3.89	Agree
PEOU5: It is easy to become skilful at using CMS	3.68	Agree
PEOU6: Find CMS easy to use	3.98	Agree
Mean	3.85	Agree

Note. Strongly Agree (SA) = 4.20-5.0, Agree (A) = 3.40 – 4.19, Neutral (N) =2.60 – 3.39, Disagree (D) = 1.80 – 2.59, Strongly Disagree (SD) = 1.0 – 1.79

Table 6 shows that under *perceived ease of use* in the acceptability of CMS, the respondents consider the statement to be acceptable as shown in the average weighted mean which is 3.85. This was supported by Bandura [4]on self-efficacy term, which explains that the more the system is easy to use, the greater should be the user's sense of efficacy. In addition, perceived ease of use is defined as the degree in which a person believes that using a particular system would be free from effort [19]

Attitude

The acceptability of CMS under *attitude* consists of the following statement: using CMS is a good idea; using CMS is a wise idea; using CMS is a positive idea; and like the idea of using CMS.

Table 7 shows the result of the acceptability of Course Management System under *Attitude*. Attitude is an important concept in the research of information systems. It is also an important construct for the information systems researches, for the technology acceptance model (TAM) that predicts the use of perceived ease of use, attitude, intention, and use. Psychological construct because they have been found on influence and have been to influence and predict many behaviors[1].

Table 7 Attitude

Indicators (Adapted from TAM's Construct Questionnaire)	Weighted Mean	Interpretation
AT1: Using CMS is a good idea	4.23	SA
AT2: Using CMS is a wise idea	4.28	SA
AT3: Using CMS is a positive idea	4.25	SA
AT4: Like the idea of using CMS	4.23	SA
Mean	4.25	SA

Legend: Strongly Agree (SA) = 4.20-5.0, Agree (A) = 3.40 – 4.19, Neutral (N) =2.60 – 3.39, Disagree (D) = 1.80 – 2.59, Strongly Disagree (SD) = 1.0 – 1.79

Table 7 shows that in the acceptability of CMS under *attitude,* the respondents consider the statement to be highly acceptable. It also showed the average weighted mean of 4.25. Based on TAM's construct revised questionnaire, the indicators used in the above table are intended for a positive attitude of the respondent's responses of the acceptability of course management system. Attitude exerts a positive effect on the behavioural intention [19].

Behavioral Intentions

The acceptability of CMS under *behavioral intentions* consists of the following statements: intend to continue to use CMS in the future; expected to use CMS in the future; and plan to use CMS in the future. The results are shown in Table 8. Behavioral intention refers to an individual's willingness to perform[2]or not to perform a specific future behavior[16].

Table 8 Behavioral Intentions

Indicators (Adapted from TAM's Construct Questionnaire)	Weighted Mean	Interpretation
BI1: Intend to continue to use CMS in the future	4.35	Strongly Agree
BI2: Expected to use CMS in the future	4.23	Strongly Agree
BI3: Plan to use CMS in the future	4.29	Strongly Agree
Mean	4.29	Strongly Agree

Note.Strongly Agree (SA) = 4.20-5.0, Agree (A) = 3.40 – 4.19, Neutral (N) =2.60 – 3.39, Disagree (D) = 1.80 – 2.59, Strongly Disagree (SD) = 1.0 – 1.79

Table 8 shows that in the acceptability of Course Management System under *behavioral intentions,* the respondents consider the statement to be highly acceptable. It also showed the average weighted mean as 4.29. Based on TAM's construct revised questionnaire, the above indicators are intended for future intentions of the respondent's responses of the acceptability of course management system. This was supported by Fishbein and Ajzen[11], which states that the behavior intention is defined as a measure of strength of one's intention to perform a specific behavior.

Over-all Acceptability of Course Management System

This section shows the over-all acceptability of CMS under *perceived usefulness, perceived ease of use, attitude, and behavioural intentions*. Table 9 presents the result of the over-all acceptability of Course Management System.

Table 9 Over-all acceptability of Course Management System

Indicators (Adapted from TAM's Construct Questionnaire)	Weighted Mean	Interpretation
Perceived Usefulness	4.05	Agree
Perceived Ease of Use	3.85	Agree
Attitude	4.25	Agree
Behavioral Intention	4.29	Agree
Grand Mean	4.11	Agree

Note.Strongly Agree (SA) = 4.20-5.0, Agree (A) = 3.40 – 4.19, Neutral (N) =2.60 – 3.39, Disagree (D) = 1.80 – 2.59, Strongly Disagree (SD) = 1.0 – 1.79

The Table 9 reveals that in the over-all acceptability of course management system, the respondents consider the statement to be acceptable with a grand mean of 4.11 It was supported by a study of pre-service teachers in Turkey that the level of technology acceptance across teachers determines the extent to which technology could be integrated into classroom settings.

Relationship Existed between Development and Acceptability of Course Management System

The relationship of the development and the acceptability of CMS is determined using the Pearson's Correlation Coefficient. The results are shown in Table 10.

Table 10 Testing Relationship between the development and acceptability of CMS

	Critical r value	**Computed r value**	**Decision**	**Interpretation**
Development and Acceptability of CMS	0.924	0.076	Failed to reject Ho	Low positive correlation; not significant

α 0.05 Level of Significance

The tabular values show that the computed r of 0.076 is numerically lower than the critical r value of 0.924 which is almost equal to zero. This is supported by Archambault[3]that the strength of the correlation were based on the distance from +1 or –1, the closer the value, the stronger the correlation.

The correlation results revealed a low positive correlation between development of CMS and its acceptability based on TAM's construct. The assumption that CMS being dependent variable to TAM's construct is not true because it failed to reject the null hypothesis. In addition, TAM's construct allowed a no significant positive correlation. This implies that the development of CMS has no significant relationship with its acceptability based on TAM's construct.

CONCLUSION

Based on the findings of the study, it is found out that the well-developed CMS is highly acceptable. However, the development of CMS is not related to its acceptability level. The integration of technology in the delivery of lesson and in the assessment process greatly contributes to the quality of learning experiences.

REFERENCES

Alsamydaimahmoodjasim, DomaMousa,Dojani&SaadG, Yaseen 2014. Factors influence the use of e-promotion means in Jordanian business organization, International journal of management science, Vol3. No. 6.Pp 433-445.

Alzen, I. 2003. The theory of planned behavior. In P.A.M. van Lange, A.W. Kruglanski& E.T. Higgins (Eds.). Handbook of Theories of Social Psychology. London. Sage

Archambault, S. (2002).Spearman rho.

Bandura, A. M. 1982. Self-efficacy mechanism in human agency. American psychologist. 37(2), p122.

Bayhan, P., Olgun, P., & Yelland, N.J. (2002). A Study of Pre-school Teachers' Thoughts about Computer-assisted Instruction. Contemporary Issues in Early Childhood, 3(2), 298-303. https://doi.org/10.2304/ciec.2002.3.2.11

Chau, P. Y. & Lai, V.S. 2003. An empirical investigation of the determinants of user acceptance of internet banking. Journal of organizational computing, 13920 pp 123-145.

Davis, F. 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Quarterly, 13(3), 319-340.

Davis, F. D. 1993.User acceptance of information technology: system characteristics, user perceptions and behavioural impacts. International Journal of Man-Machine Studies 38(3): 475-487. http://hdl.handle.net/2027.42/30954

Dillon, A. &Moris, M. G. 1997. User acceptance of information technology: Theories and models, annual review of information science on of technology, 31, pp3-32.

Ehrenfeld, J. R. 2009. Sustainability by design: a subversive strategy for transforming our consumer culture Fishbein, M. &Ajzen, I. 1975. Belief, attitude, intention, and behavior: an introduction to theory and research. Reading, MA: Addison-Wesley

Frantzeskaki, N., Loorbach, D., &Meadowcroft, J. 2012. Govering sovietal transitions to sustainability. Int. J. Sustainable Development. Vol. 15, Nos. 1/2. pp. 19-36

Gelik, H. E. &Yilmaz, V. 2011. Extending the technology acceptance model for adoption of Eshopping by consumers in Turkek. Journal of electronic commerce research, vol.12 No2 p 154.

International Society for Technology in Education. 2016. Redefining learning in a technology-driven world: A report to support adoption of the ISTE Standards for Students

Jones, S., Johnson-Yale, C., Millermaier, S., & Pérez, F. S. (2009). U.S. college students' internet use: Race, gender and digital divides. *Journal of Computer-Mediated Communication*, *14*(2), 244-264. DOI: 10.1111/j.1083-6101.2009.01439.x

Konerding, et al. 1999. Evidence for characteristic vascular patterns in solid tumours: quantitative studies using corrosion casts

McLeod, S. 2008. Likert Scale

Moon, J.-W. & Kim, Y.G. 2001. Extending the TAM for the World-Wide-Web context. Information and Management (38) 2001, pp 217-230.

Nunkoo, R., S. L. Smith, & H. Ramkissoon. 2013. "Residents' Attitudes to Tourism: A Longitudinal Study of 140 Articles from 1984 to 2010." Journal of Sustainable Tourism 21 (1):5–25.

Parker, B. (2014). Top 5 Benefits of Using a Learning Management System. ELearning Brothers. Retrieved 12 March 2016, from http://elearningbrothers.com/top-5-benefits-of-using-a-learning-managementsystem/

Taylor, S. & Todd, P. A. 1995. Understanding information technology usage: a test of competing models. Institute for Operations Research and the Management Sciences

Venkatest, V. 2000. Determinants of perceived ease emotion into the technology acceptance model, information system research Vol.11. 4(4) pp 342-365.
