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Teachers' digital competence in utilizing educational software in accounting, business, and management strand

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ABSTRACT. Technological breakthroughs have caused significant changes in the field of accounting, business, and management (ABM); thus, demand congruence with teacher's technology skills in handling ABM courses. This study used the descriptive-survey method of research using questionnaire as the main research tool in gathering data. The researcher utilized the combination of quantitative and qualitative research methods. The former was used to describe the characteristics of ABM teachers in terms of their socio-demographic profile and to discuss and assess their digital competence while the latter was applied to examine the strengths and weaknesses of the ABM educational software. A total of 138 ABM teachers participated in the study. Findings reveal that the level of teachers' digital competence is mostly high. Specifically, they are very much capable in using educational software that are needed in their everyday work but not on software needed to assist them in the teaching-learning process. Thus, this study has implications not only for ABM teachers who play a significant role in equipping the future workforce in the field of ABM. This study calls for continuous support from the Philippine Department of Education. This sector is responsible for providing trainings and assistance to teachers' digital competencies particularly in the utilization and proper integration of educational software to the various ABM subjects. Together with school leaders and administrators, they must provide opportunities for the teachers to receive hands-on trainings where tool kits and manuals will be provided. Such ongoing initiatives will lead to better and quality education where learners are equipped to dive into the digital world of ABM.

Keywords: ABM; digital competence; educational software; teachers.

Competência digital dos professores na utilização de software educacional nas vertentes de contabilidade, negócios e gestão

RESUMO. Os avanços tecnológicos causaram mudanças significativas no campo da contabilidade, negócios e gestão (ABM); portanto, exige congruência com as habilidades tecnológicas do professor ao lidar com os cursos de ABM. Este estudo utilizou o método de pesquisa descritivo de pesquisa usando questionário como a principal ferramenta de pesquisa na coleta de dados. O pesquisador utilizou a combinação de métodos de pesquisa quantitativos e qualitativos. O primeiro foi usado para descrever as características dos professores ABM em termos de perfil sociodemográfico e para discutir e avaliar sua competência digital, enquanto o segundo foi aplicado para examinar os pontos fortes e fracos do software educacional ABM. Participaram do estudo 138 professores da ABM. Os resultados revelam que o nível de competência digital dos professores é geralmente alto. Especificamente, eles são muito capazes de usar software educacional que são necessários em seu trabalho diário, mas não em software necessário para auxiliá-los no processo de ensino-aprendizagem. Assim, este estudo tem implicações não apenas para os professores de ABM que desempenham um papel significativo no preparo da futura força de trabalho no campo da ABM. Este estudo exige apoio contínuo do Departamento de Educação das Filipinas. Este setor é responsável por fornecer treinamentos e assistência às competências digitais dos professores, principalmente na utilização e integração adequada de software educacional às várias disciplinas de ABM. Juntamente com os líderes e administradores escolares, eles devem oferecer oportunidades para que os professores recebam treinamentos práticos nos quais kits de ferramentas e manuais serão fornecidos. Essas iniciativas contínuas levarão a uma educação melhor e de qualidade, onde os alunos estarão preparados para mergulhar no mundo digital do ABM.

Palavras-chave: ABM; competência digital; software educacional; professores.

Competencia digital de los docentes en el uso de software educativo en la rama de contabilidad, negocios y administración

RESUMEN. Los avances tecnológicos han provocado cambios significativos en el campo de la contabilidad, los negocios y la gestión (ABM); por lo tanto, exija congruencia con las habilidades tecnológicas de los docentes en el manejo de los cursos de ABM. Este estudio utilizó el método de investigación descriptivo-encuesta utilizando el cuestionario como la principal herramienta de investigación en la recopilación de datos. El investigador utilizó la combinación de métodos de investigación cuantitativos y cualitativos. El primero se utilizó para describir las características de los docentes ABM en términos de su perfil sociodemográfico y para discutir y evaluar su competencia digital, mientras que el segundo se aplicó para examinar las fortalezas y debilidades del software educativo ABM. Un total de 138 profesores de ABM participaron en el estudio. Los resultados revelan que el nivel de competencia digital de los docentes es mayoritariamente alto. Específicamente, son muy capaces de usar el software educativo que necesitan en su trabajo diario, pero no el software necesario para ayudarlos en el proceso de enseñanza-aprendizaje. Por lo tanto, este estudio tiene implicaciones no solo para los docentes de ABM que juegan un papel importante en equipar a la futura fuerza laboral en el campo de ABM. Este estudio requiere el apoyo continuo del Departamento de Educación de Filipinas. Este sector es responsable de brindar capacitaciones y asistencia a las competencias digitales de los docentes, particularmente en la utilización e integración adecuada de software educativo a las diversas materias de ABM. Junto con los líderes y administradores escolares, deben brindar oportunidades para que los maestros reciban capacitaciones prácticas donde se proporcionarán juegos de herramientas y manuales. Tales iniciativas en curso conducirán a una educación mejor y de calidad donde los estudiantes estén equipados para sumergirse en el mundo digital de ABM.

Palabras clave: ABM; competencia digital; software educativo; docentes.

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Introduction

The field of accounting, business, and management (ABM) education has significantly changed because of technology. Educational technology can facilitate simple computation and the visualizations of situations and relationships, allowing students to comprehend accounting, business, and management concepts in practice better. Technology can be a tool for students to accounting-business model relationships in real-world situations. Technology is also an integral part of the core standards, and it emphasizes preparing students for secondary, tertiary, and 21st century careers (Greenhill, 2010).

Educational technology is a broad category that includes a wide range of electronic devices and applications that deliver content and support learning (Hlynka & Jacobsen, 2009). Technology is an essential tool for learning in the 21st century. But it is only a tool; it cannot replace conceptual understanding, computational fluency, or problem-solving skills.

Set theory, numerical calculation, measurement of length, perimeter, area, and volume of two-dimensional and three-dimensional objects, drawing 2 and 3D figures, equation solving and graphical representation, transformation, trigonometric, exponential, and logarithm functions related calculation and problem solving, and operations of matrix have all been incorporated into school. These concepts are challenging to teach with a board and marker; hence, verities of digital devices can be used for their effectiveness. Several teaching-related software or digital resources are available on the internet. Each software has separate functions and applications. Based on the nature of their subject matter, teachers can use any program or software. Teachers can use digital resources to aid their teaching-learning process in a variety of ways. They required a high level of digital competency in this regard.

Digital competency is the general term used to describe or explain the use of information technology (IT) in a specific context (Ilomäki, Paavola, Lakkala, & Kantosalo, 2016). Digital competence is essential for learning, work, and active participation in society. For school education, as important as understanding the competence itself is knowing how to help develop it. Work, employability, education, leisure, inclusion, and participation in society -- all of these and many other areas of our society are becoming increasingly 'digitized', meaning that information and services are increasingly being made available through the internet. Consequently, digital competence is vital for participation in today's society and economy. As a transversal competence, digital competence also helps people to master other key competencies, such as communication, language skills, or basic skills in math and science (Al Khateeb, 2017).

Every teacher should be familiar with subject-related software and how it affects their regular classroom procedures. Many research studies suggest that information, communication, and technology (ICT) helps teachers and students learn more efficiently and effectively. Active Educate, a dynamic software tool, was tested to see if it enhances students' teamwork and creative reasoning when solving accounting problems (Lee, Thomas, & Baskerville, 2015). Biswas, Leelawong, Schwartz, Vye, and The Teachable Agents Group at Vanderbilt (2005) suggested that educational software provides a new opportunity for better teaching. Suleman, Hussain, ud Din, and Shafique (2017) found that ICT applied class students' achievement was higher than other students. Agyei and Voogt (2011) suggested that ICT should be integrated into the curriculum and management required hardware and software-related ICT instruments in school. Technology-based reading applications hold great promise in improving students' reading literacy levels (Quimsing & Ortega-Dela Cruz, 2024). Dangan and Ortega-Dela Cruz (2021) suggested that to improve the grammatical competence of the students, more relevant and useful supplementary materials should be given to them. The use of technology in the classroom arguably has benefits for the teaching of the curriculum as it allows access to the most up-to-date information and helps to provide valuable artistic experience (De Leon & Ortega-Dela Cruz, 2024). Ghavifekr and Rosdy (2015) advocated that ICT is useful for graphic representation, numerical calculation, and a real concept of the accounting figure during teaching and learning. The other line of action concerns the accounting lessons' resource problem; open-ended and complex problem solving takes much time. However, technical accounting skills must be trained because process-oriented skills cannot be applied without them.

Moreover, it is difficult to decide what software is the most suitable for teaching accounting, business, and management subjects at technical universities. The best software should be applicable not only for specific tasks but also for students who should use it in various subjects. Students need to have easy access to get this software for studying it at home instead of limited usage of this software on the computers in PC laboratories.

In response to the growing need for digital competence and the change of learning modality in the new normal, teachers should be equipped with those tools to deliver quality education to students. Senior high school teachers specifically under accounting, business, and management strand should give students the opportunity to learn specific technological resources in accounting and business management contexts. They must focus on providing quality education and students' attention on how and when to use technology appropriately in ABM classrooms and give students opportunities to apply their knowledge of technology and its uses in the teaching and learning process. Undoubtedly, there is a need for assessing ABM educational software tools for quality improvements in teaching. The most current software tools are promising, but they lack the generality that would allow results to be applied to other subjects. Process orientation and its implications on individual assessment can help to overcome this situation.

This study aimed to evaluate the digital competence of senior high school teachers in using educational software in teaching ABM courses. This is to enhance their skills and capabilities in utilizing this software in delivering quality education. Specifically, this study (i) determined the level of competence of the ABM teachers in using such educational software in terms of frequency of use, and teachers' capability of utilizing the specified software; and (ii) assessed their level of digital competence in terms of (a) technology literacy in the everyday work of a teacher, (b) knowledge deepening in the everyday work of a teacher, (c) knowledge creation in the everyday work of a teacher, (d) technology literacy, and (e) knowledge deepening.

Material and methods

Research design

This study used the descriptive-survey method of research using questionnaire as the main research tool in gathering data. The researcher utilized the combination of quantitative and qualitative research methods. The former was used to describe the characteristics of ABM teachers in terms of their socio-demographic profile and to discuss and assess their digital competence while the latter was applied to examine the strengths and weaknesses of the ABM educational software.

This research design method is the most applicable design for this study since mixing data sets can give a better understanding of the problem and yield more complete evidence. Some objectives of the study need the profiling of the respondents which demand a quantitative approach; however, the researcher also needs opinions in utilizing the educational software through open-ended questions which are deemed subjective and best dealt by qualitative methods.

In its essence, the combination of quantitative and qualitative research method was used to gain a better understanding of connections or contradictions between qualitative and quantitative data; they provided opportunities for participants to have a strong voice and share their experiences across the research process, and they facilitated different avenues of exploration that enrich the evidence and enable questions to be answered more deeply (Wisdom & Creswell, 2013).

Research participants

This study was composed of purposively selected four schools in Nagcarlan, Laguna, Philippines. The schools were selected based on its population which are all categorized as 'Large' schools. The researcher conducted a survey on the total of 138 ABM teachers in the selected schools.

In terms of age, 27 or 20% of the teachers are 30-34 years old while 3 or 2% are 60 years old and above. It is also observed that a great number (20 or 14%) of the teachers are 25-29 years old. This implies that some of the teachers are already almost to their retirement age. The majority (94 or 68%) of the teachers are married. However, 44 or 32% are single. The majority (93 or 67%) of the teachers are female, and about 33% are male. The majority (89 or 64%) of the teachers are with master units. It is also observed that there is a great number (22 or 16%) of teachers with master's degree. The majority (72 or 52%) of the teachers are on one to eight years in the service. While least (5 or 4%) are on 34-39 years in the service. This implies that teachers who rendered more than 21 years have more experience using traditional and innovative teaching methods in ABM. The majority (96 or 70%) of teachers attended below three training or seminars related to technology. A great number (32 or 23%) of teachers attended 4-6 training or seminars related to technology. This shows that teachers engaged themselves in attending technological-related seminars and training to upgrade their capability on new trends.

Most (59 or 43%) of the teachers have been using technology for less than five years. A great number (52 or 38%) of teachers use technology for 5-9 years. This indicates that teachers are trying to integrate technology into classroom instruction, making it an effective tech integration across the curriculum to deepen and enhance the learning process.

The majority (81 or 59%) of the teachers experience moderate internet connection, 48 or 35% of the teachers experiences low internet connection. Almost all teachers (134 or 97%) have laptops, while most (116 or 84%) have smartphones. Lastly, almost all (126 or 91%) of the teachers do not own a tablet.

Instrumentation

The google form served as a survey instrument to collect the needed data. The form was subdivided into four parts: first is the ABM teachers' socio-demographic profile, including age, sex, civil status, educational attainment, years in teaching, and number of related seminars and training attended for the last three years. Second, is the technological related profile, which included the number of years using technology, devices' availability, and internet connection availability. It also contains the teacher's frequency in using the educational software using a ten-point scale where one indicates that the teacher had never utilized the specified software and 10 indicates that the teacher uses the software every time s/he teaches. The perceived capability of teachers on using ABM software was also included where in a ten-point Likert scale was used. The number one indicates that the teacher cannot use the educational software, and 10 indicates extremely capable. The third is the digital competence of ABM teachers adapted from the UNESCO ICT Competency Framework for Teachers. It utilized the five-point Likert scale where one indicates the strong disagreement of the teacher in the statement defining his technical competencies, whereas five denotes strong agreement. Lastly, it contained an open-ended question which all about the teacher's experiences in integrating technology as part of the instructional materials as well as their perceived strengths and weakness of the educational software.

Arbitrary norms used in the study for the digital competence level of teachers' frequency of using the educational software and for the capability of teachers in using it are described in Figure 1.

Item DR		Overall Descriptive Rating (DR)
	Frequency in Using ABM Software	
9 - 10	Every time	Very High (VH)
7 - 8	Always	High (H)
5 - 6	Sometimes	Average (A)
3 - 4	Almost Never	Low (L)
1 - 2	Never	Very Low (VL)
	ICT Level of Competency (UNESCO)	
4.21 –5.00	Strongly Agree	Very High (VH)
3.41 –4.20	Agree	High (H)
2.61 – 3.40	Maybe	Average (A)
1.81 –2.60	Disagree	Low (L)
1.00 –1.80	Strongly Disagree	Very Low (VL)
	Capability in Using ABM Educational Software	
10	Extremely capable	
7 - 9	Very much capable	
4 - 6	Average capable	
1 - 3	Not capable/Needs assistance/Needs improvement	

Figure 1. Arbitrary norms used in the study for the digital competence level of teachers' frequency of using the educational software and for the capability of teachers in using it.

Validation procedures

To ensure high reliability, the researcher conducted interviews with 25 respondents. A total of 163 samples were obtained, of which 25 samples for pre-testing was obtained from the different schools outside the Nagcarlan District.

In the second phase, the researcher conducted a scale reliability analysis with Cronbach's Alpha coefficient. Literally, a scale is considered reliable if Cronbach's Alpha coefficient is greater than 0.7 and its corrected total-item correlation of each item is greater than 0.3. With the certification of the statistician, the alpha coefficient for the fifty-two items in the survey questionnaire is 0.956, suggesting that the items have relatively very high internal consistency. Therefore, it is reliable and accepted.

Data analysis

Data gathered in relation to the level of digital competence of the ABM teachers were analysed through descriptive statistics such as mean. Descriptive ratings were also indicated for clear presentation purposes. Furthermore, qualitative data were analysed through content analysis, focusing on the words and opinions that were gathered in the open-ended questions.

Ethical considerations

In the conduct of the research, the following ethical principles were observed. The researcher maintained the privacy and confidentiality of the participants by assigning codes/ pseudonym to the respondents. All documents pertaining to the participants were placed in a secured and locked filing cabinet. After the research, the said documents were destroyed through shredding and the recorded interview was deleted. The researcher provided the participants with proper orientation on the purpose of the study. The benefits that they get from the research were explained to them. Their willingness to participate by answering the questions during the interview is tantamount to an implied consent. Voluntary participation was solicited from the respondents. They were informed that they can withdraw their participation anytime. The researcher ensured that respect of dignity, autonomy, and the involuntariness of the research participants were not compromised during the conduct of the research. The participants benefited from the study because the result was used to develop suitable support programs for them. There was no compensation given to the respondents for participating in the interview.

Results and discussion

Level of competence of the ABM teachers in using the educational software in terms of:

- Frequency of use

Findings show that teachers 'always' use MS Excel as indicated by a mean rating of 7.00 (Table 1). This

indicates that MS Excel is a valuable resource in the ABM classroom, since it provides numerous advantages through its functionalities, formulas, graphs or charts, and tables. Teachers find it easier to use excel worksheets in the classroom. Thus, excel spreadsheets can also be used to create graphs or tables effectively and efficiently. On the other hand, teachers 'sometimes' use Pabbly and Wave with a mean rating of 5.34 and 6.06. This means that, despite the significant benefits of using Wave and Pabbly in improving students' understanding of accounting, business, and management and providing a great opportunity for visualization, manipulation, and exploration of figures and concepts, a significant number of teachers are still having difficulty effectively implementing it in their classrooms. However, teachers 'almost never' and 'never' used the following applications: Intuit QuickBooks Online, FreshBooks, Sage 50cloud, Xero, AccountEdgePro, NetSuite ERP. Accounting See, and K-12 Online.

Table 1. Frequency in utilizing the educational software.

Software	$\bar{\bar{x}}$	DR
MS Excel	7.00	Always
Intuit QuickBooks Online	2.11	Never
FreshBooks	2.60	Never
Pabbly	5.34	Sometimes
Wave	6.06	Sometimes
Sage 50cloud	2.71	Never
Xero	4.48	Almost Never
AccountEdgePro	3.70	Almost Never
NetSuite ERP	3.28	Almost Never
Accounting Seed	3.24	Almost Never
K-12 Online	3.50	Almost Never

- Teachers' capability of utilizing the educational software

In terms of the capability of utilizing the educational software, results show that teachers are Very Much Capable of using MS Excel, as indicated by a mean rating of 7.50 (Table 2). This signifies that MS Excel is a great help in the ABM classroom, thus, offers many benefits with its functions, formulas, graphs or charts, and tables. In teaching, teachers find it easier to make use of excel worksheets, such as grading sheets or the Electronic Class Record (e-class record), different forms, like Form 1, which is the student's profile, Form 2 for the student's attendance, and many more. Creating graphs or tables can also be carried out effectively and efficiently by using excel spreadsheets.

Table 2. Capability in utilizing specified software.

Software	$\bar{\bar{x}}$	DR
MS Excel	7.50	Very much capable
Intuit QuickBooks Online	3.11	Needs assistance
FreshBooks	2.76	Needs assistance
Pabbly	5.34	Average capable
Wave	6.06	Average capable
Sage 50cloud	3.71	Needs assistance
Xero	4.48	Average capable
AccountEdgePro	4.72	Average capable
NetSuite ERP	3.28	Needs assistance
Accounting Seed	3.24	Needs assistance
K-12 Online	3.50	Needs assistance

According to Chaamwe and Shumba (2016), a spreadsheet is a helpful tool for educators. Using spreadsheets promotes higher-order thinking skills. Several assignments use formulas, which are then generalized, so it enables to see how the outcome is changed when one of the variables in the formula is altered. The spreadsheet tool promotes the development of problem-solving skills and supports 'what if' type questions. Some templates have formulas inserted to focus on problem-solving, while the computer makes the calculations for them. Educators make charts and graphs from spreadsheet records, organize their ideas, and present information to the learners. Charts add meaning to information, helping to analyse and interpret data to identify the maximum and minimum, mean, median, and mode of a data set. The computer can generate bar graphs, line graphs, and pie charts.

Meanwhile, the teachers are Averagely Capable of using Wave with a mean rating of 6.06; Pabbly having a mean rating of 5.34; Xero with a mean rating of 4.48 and AccountEdgePro having a mean rating of 4.72. This implies that despite the remarkable benefits of using Wave and Pabbly in enhancing students' learning of accounting, business and management and providing a great opportunity for visualization, manipulation, and exploration of figures and concepts. A considerable number of teachers are still struggling with the task of effectively using it for everyday teaching. Even though teachers have access to computers and appropriate software is available both in school and at home, technology is rarely integrated substantially into everyday teaching. The authors argue that although using Computer Accounting System in upper-level secondary school has a high potential for procedural concepts to be followed, it leads to black-boxing the central concepts that focus on the teaching (Bu, Spector, & Haciomeroglu, 2011). Existing technology equipment should be used to the maximum by the educators. The use of technology is important because it serves as an object of education, which affects the learning content and objectives, and as a medium to improve the teaching and learning process (Agyei & Voogt, 2011).

Furthermore, teachers need assistance in all other software mentioned in the study, which is indicated by a mean rating of 2.76 to 3.71. The results imply that teachers with strong work methods were better at exploiting the potential of MS Excel, Wave, Pabbly, Xero and AccountEdgePro. On the other side, they lack the integration and technical Knowledge of using Intuit QuickBooks Online, FreshBooks, Sage 50cloud, NetSuite ERP, Accounting Seed, and K-12 Online in the teaching-learning process.

- Level of digital competence of the ABM Teachers in terms of:

a. Technology literacy in the everyday work of a teacher

Findings show that teachers have high digital competency and technology literacy in everyday work as indicated by a mean rating of 4.10 (Table 3). The results imply that teachers have high technology literacy and adopting how learners construct ABM knowledge and develop skills integrating technology. Moreover, teachers were able to build a learning community in the classroom in which students are continuously engaged in developing their own and each other's learning skills.

Table 3. Digital Competency along technology literacy in everyday work of a teacher.

Technology literacy in the everyday work of a teacher		$\bar{x}$	Description
Understanding ICT in Education	A mother-tongue teacher understands the basic principles of using ICT in teaching, he considers how to make the best use of an interactive whiteboard or projector recently installed in his classroom.	4.45	Very High Competency
Curriculum and Assessment	The teacher realizes that using word processing onthe interactive whiteboard or projector would offer a new approach to one of the basic skills in the curriculum – how to improve the wording of sentences.	4.21	Very High Competency
Pedagogy	Using the word processing application, the teacher displays on the interactive whiteboard some examples of poor writing.	3.86	High Competency
ICT	The teacher uses a word processing application on the interactive whiteboard or projector while conducting a discussion with the class.	4.09	High Competency
Organization and Administration	The teacher uses the school's trolley of laptop computers so that each student can carry out word processing on their own.	3.68	High Competency
Teacher Professional Learning	The teacher searches various websites for mother-tongue teachers to find teaching resources on writing skills, including exercises and writing assignments, stimulus material and ideas for lessons.	4.33	Very High Competency
	OVERALL	4.10	High Competency

Legend: 4.21-5.00-Very High Level of Competency; 3.41-4.20-High Level of Competency; 2.61-3.40-Average Level of Competency; 1.81-2.60-Low Level of Competency; 1.00-1.80- Very Low Level of Competency

When students learn to communicate, a deep understanding occurs, and this ability helps create a literate individual. Thus, the demonstration of literacy has been a requirement to understand concepts and use ideas and communicate thoughts clearly (Ruthven, Hennessy, & Brindley, 2004). Olumide (2018) insisted that communication opportunities should regularly exist in the classroom because it was common for students to think they understood a new concept until required to explain their understanding to another. Without the opportunity to engage in this exchange, students may realize they lack sufficient understanding and the language skills to articulate their thought clearly.

b. Knowledge deepening in the everyday work of a teacher

Results reveal that teachers have high digital competency and knowledge deepening in everyday work, having a mean rating of 4.00 (Table 4). This implies that teachers understand policy goals and social priorities, identify, design, and use specific classroom activities to address these goals and priorities. Thus, it enables the use of ICT to create and monitor individual and group student project plans, accesses information and experts, and collaborate with other teachers to support their professional learning.

Table 4. Digital competency along knowledge deepening in the everyday work of a teacher.

Knowledge deepening in the everyday work of a teacher		$\bar{\bar{x}}$	Description
Understanding ICT in Education	The teacher things he can use ICT to change students' attitudes and help them become fitter, so he writes a detailed financial bid to the school administration, explaining in detail why the ICT would improve the accounting, business management lessons and help students learn.	4.08	High Competency
Curriculum and Assessment	The ABM teacher uses the ICT to focus on issues of problem-solving which he had not been able to make vivid and engaging before.	4.04	High Competency
Pedagogy	The teacher can be able to show them video clips from accounting, business management and situational videos which features in solving problems that make it look very attractive.	4.25	Very High Competency
ICT	The teacher obtains a laptop computer and data projector so that everyone in the class can see computer display and uses spreadsheet software for students to record their assessments each week.	4.07	High Competency
Organization and Administration	The teacher uses his laptop to monitor the students' entries on their collaborative spreadsheet and to post on the social networking site encouraging comments and extra information.	3.72	High Competency
Teacher Professional Learning	The teacher regularly visits an internet discussion forum hosted by the professional association for ABM teachers. The forum is a useful source of new ideas on how to get students more interested in accounting, business management.	3.82	High Competency
	OVERALL	4.00	High Competency

Legend: 4.21-5.00-Very High Level of Competency; 3.41-4.20-High Level of Competency; 2.61-3.40-Average Level of Competency; 1.81-2.60-Low Level of Competency; 1.00-1.80- Very Low Level of Competency

Amineh and Asl (2015) suggested that young educators view all new ideas and knowledge through the lens of their own experiences and apply those experiences to make sense of new information. Experience and active participation, relevancy, and purpose create new understanding by linking information to prior knowledge and are integral characteristics of an effective learning environment. Thus, indicating that young educators had higher levels of technological literacy and implementation than their older counterparts. Added by Greenhow, Robelia, and Hughes (2009), young educators recognize the digital differences and accept that learning for many students takes place in a more personal, meaningful, and distinctive way, their interests and needs. When contemplating 21st century needs such as communication and collaboration, Letwinsky (2017) agreed that the opportunities made possible by technology provided a more effective way to reach students and foster a more collaborative, diverse, and communication-rich atmosphere.

c. Knowledge creation in the everyday work of a teacher

Findings show that ABM teachers have 'Very High' capability on Knowledge Creation in the Everyday Work of a Teacher with a mean rating of 4.35 (Table 5). This implies that teachers are competent in the knowledge creation approach and enable to design of ICT-based learning resources and environments, thus, using ICT to support the development of knowledge creation and critical thinking skills.

d. Technology literacy

The findings show that ABM teachers have 'very high' capability on Technology Literacy with a mean rating of 4.38 (Table 6). The results imply that teacher practice involves knowing where and when to use technology for classroom activities, presentations, management tasks, and acquisition of subject matter and pedagogical Knowledge to support the teachers' professional learning. Teachers use an alternative delivery mode of learning.

Specifically, teacher-participant 20, said: "It is with great help to the learners having the E- *tulay* in tv broadcasting as one of the sources of their learning".

E- *tulay* is a free online tutorial platform for learners given by excellent and inspiring educators, who assume the role of a facilitator and guide the students to another level of a learning experience.

Table 5. Digital competency along knowledge creation in the everyday work of a teacher.

Knowledge creation in the everyday work of a teacher		$\bar{\bar{x}}$	Description
Understanding ICT in Education	An ABM teacher takes a leading role in organizing an ICT-based project for students in collaboration with the history teacher and geography teacher.	4.23	Very High Competency
Curriculum and Assessment	The project addresses parts of the curriculum in accounting, business management where it uses graphs and charts to analyse and display complex statistical information.	4.47	Very High Competency
Pedagogy	The teacher act as monitors and coaches to the students, ensuring the students have the skills and knowledge they need, advising them of methods they could use, ensuring the students stay focused on their tasks and meet the deadlines they have agreed.	4.50	Very High Competency
ICT	The students use spreadsheet programs to analyse and display statistics about emigration and immigration flows and presentation software to create presentations, including video clips and still images, to present their findings to others.	4.35	Very High Competency
Organization and Administration	The teacher creates environments on the school's learning management system which allow students to store, share and develop their work collaboratively. This includes areas for shared files, wikis, and a discussion forum.	4.22	Very High Competency
Teacher Professional Learning	The teacher regularly shows other teachers how the project uses ICT to enable students to generate knowledge while studying their school subjects.	4.34	Very High Competency
	OVERALL	4.35	Very High Competency

Legend: 4.21-5.00-Very High Level of Competency; 3.41-4.20-High Level of Competency; 2.61-3.40-Average Level of Competency; 1.81-2.60-Low Level of Competency; 1.00-1.80- Very Low Level of Competency

Table 6. Digital competency along technology literacy.

Technology literacy		$\bar{\bar{x}}$	Description
Understanding ICT in Education	Teachers must be aware of policies and be able to articulate in consciously skilled ways how their classroom practices correspond to and support policy.	4.27	Very High Competency
Curriculum and Assessment	Teachers must have an excellent knowledge of the curriculum standards for their subject,	4.47	Very High Competency
Pedagogy	Teachers must know where, with whom, when and how to use ICT for classroom activities and presentations.	4.46	Very High Competency
ICT	Teachers must know basic hardware and software operations, as well as productivity applications software, a web browser, communications software, presentation software, and management applications.	4.35	Very High Competency
Organization and Administration	Teachers must be able to use technology with the whole class, small groups, and individual activities and ensure equitable access is provided to all students.	4.36	Very High Competency
Teacher Professional Learning	Teachers must have the technological skill and knowledge of web resources necessary to use technology to acquire additional subject matter and pedagogical knowledge in support of their own professional learning.	4.35	Very High Competency
	OVERALL	4.38	Very High Competency

Legend: 4.21-5.00-Very High Level of Competency; 3.41-4.20-High Level of Competency; 2.61-3.40-Average Level of Competency; 1.81-2.60-Low Level of Competency; 1.00-1.80- Very Low Level of Competency

Teacher- participant 90 also shared the same thoughts, "To supplement the printed modules given to the students, I see to it that I can meet my class through Google meet".

No matter the type of channel used (radio, TV, mobile, online platforms, etc), a great percentage of the participants said that they needed to adapt their practices and be creative to keep students engaged as every household has become a classroom – more than not – without an environment that supports learning.

In the study of Apostolou, Dorminey, Hassell, and Rebele (2015), the tasks required in a context include, for example, reading instructions from graphical displays in user interfaces; utilizing digital reproduction to create new, meaningful materials from existing ones; constructing knowledge from nonlinear, hypertextual navigation; evaluating the quality and validity of information, and have a mature and realistic understanding of the rules that prevail in the cyberspace. The newly emerging concept of technological literacy may be

utilized to measure the quality of learners' work in technological environments and provide scholars and developers with a more effective means of communication in designing better user-oriented environments.

e. Knowledge deepening

The findings show that ABM teachers have 'very high' capability on Knowledge Deepening in the Everyday Work of a Teacher with a mean rating of 4.33 (Table 7). This implies that teachers employed open-ended ICT tools specific to their subject areas, such as visualizations and data visualizations.

Table 7. Digital competency along knowledge deepening.

Knowledge deepening		$\bar{\bar{x}}$	Description
Understanding ICT in Education	Teachers must have an in-depth knowledge of national policies and social priorities, and be able to design, modify, and implement classroom practices that support policy understanding.	4.28	Very High Competency
Curriculum and Assessment	Teachers must have a deep knowledge of their subject and the ability to apply it flexibly in a variety of situations. They must also be able to create complex problems, whose solutions measure students' understanding.	4.36	Very High Competency
Pedagogy	Teachers must have the skills to help students create, implement, and monitor project plans and solutions. In addition, teachers need to use assessment for learning as a basic principle guiding their practice.	4.36	Very High Competency
ICT	Teachers must be knowledgeable about a variety of subject-specific tools and applications and be able to flexibly use these in a variety of problem-based and project-based situation. Teachers should be able to use network resources to help students collaborate, access information, and communicate with external experts to analysed and solve their selected problems.	4.25	Very High Competency
Organization and Administration	Teachers must be able to create flexible classroom learning environments. Within these environments, teachers must be able to integrate student-centred activities and flexibly apply technology to support collaboration.	4.32	Very High Competency
Teacher Professional Learning	Techers must have the skills and knowledge to create and manage complex projects, collaborate with other teachers, and make use of networks to access information, colleagues, and outside experts in supporting their own professional learning.	4.39	Very High Competency
	OVERALL	4.33	Very High Competency

Legend: 4.21-5.00-Very High Level of Competency; 3.41-4.20-High Level of Competency; 2.61-3.40-Average Level of Competency; 1.81-2.60-Low Level of Competency; 1.00-1.80- Very Low Level of Competency

To better understand the results, Table 8 presents the summary of the Level of Digital Competence of the ABM teachers.

Results reveal that the ABM teachers are highly competent in technological literacy and in the knowledge deepening in their everyday work. Whereas in terms of their knowledge creation, technology literacy and knowledge deepening in general, they possess a very high digital competence. This only implicates that the teachers in the ABM discipline are very highly competent in integrating technology in their day-to-day work including their teaching practice and other ancillary works and in terms of their professional development.

Table 8. Summary of the ABM teachers' digital competence.

Digital competencies	$\bar{\bar{x}}$	Description
A. Technology literacy in the everyday work of a teacher	4.10	High Competency
B. Knowledge Deepening in the Everyday Work of a Teacher	4.00	High Competency
C. Knowledge Creation in the Everyday Work of a Teacher	4.35	Very High Competency
D. Technology Literacy	4.38	Very High Competency
E Knowledge Deepening	4.33	Very High Competency
Overall	4.23	Very High competency

According to UNESCO ICT Competency Framework for Teachers, (United Nations Educational, Scientifi c and Cultural Organization [UNESCO], 2011), 'technology literacy' enables the learners, citizens, and the workforce to use ICT to support social development and improve economic activity. It involves the use of various ICT tools and digital content as part of whole class, group, and individual student activities. 'Knowledge deepening' increases the ability of students, citizens, and the workforce to add value to society and to the economy by applying the knowledge gained in school subjects to solve complex, high priority problems encountered in real world situations of work, society and in life generally. Teaching is student-centred and the teacher's role is to structure tasks, guide student understanding and to support students as they tackle collaborative projects. Teachers help students create, implement, and monitor project plans and solutions. Lessons and classroom structure are more dynamic, with students working in groups for extended periods of time. In guiding students' understanding of key concepts, teachers will employ open-ended ICT tools that are specific to their subject area, such as visualizations in science, data analysis tools in mathematics and role play simulations in social studies. Teacher competencies related to this include the ability to manage information, structure problem tasks, and integrate open-ended software tools and subject-specific applications with student-centred teaching methods and collaborative projects in support of students' in-depth understanding of key concepts and their application to complex, real-world problems (Norton & Hathaway, 2012). 'Knowledge creation' increases productivity by creating students, citizens, and a workforce that is continually engaged in, and benefits from, knowledge creation, innovation, and life-long learning. This includes teacher's skills such as problem solving, communication, collaboration, experimentation, critical thinking, and creative expression. Teachers who are competent in the knowledge creation approach will be able to design ICT-based learning resources and environments; use ICT to support the development of knowledge creation and the critical thinking skills of students; support students' continuous, reflective learning; and create knowledge communities for students and colleagues.

The participants narrated that they must engage technology in this pandemic to cope with the present situation of the new normal education. Teacher-participant 10 said, "Being a teacher in this era, I also need to adjust to the changes. One of the best practices is to learn and study about the technology".

Teacher-participant 20 also revealed that, "Making own videos, sending links, and downloading videos related to the lesson are the practices I employed for the learner to understand better the topics given to them".

Technology-enhanced government-teacher support, adapting existing coaching programs to be delivered remotely, creating spaces for peer support programs, such as the Virtual EdCamps initiative, created to facilitate peer-to-peer learning among teachers or establish EdTech hotlines for teachers. Hence, technology interventions enhanced teacher engagement with students through improved access to content, data, and networks, helping teachers better support student learning.

Malik (2018) mentioned a growing demand for educational institutions to use ICT to teach students skills and knowledge for the 21st century. Realizing the effect of ICT on the workplace and everyday life, today's educational institutions try to restructure their educational curricula and classroom facilities to bridge the existing technology gap in teaching and learning. This restructuring process requires effective adoption of technologies into an existing environment to provide learners with knowledge of specific subject areas, promote meaningful learning, and enhance professional productivity.

Perceived strengths and weaknesses of ABM educational software

The computerized accounting and business software that is available today has come a long way in its development over the years to be supported and used among Senior High School campuses. When it comes to keeping track of spending, preparing taxes, and analysing income development, many systems promote themselves as making the lives of company owners simpler. Despite the proliferation of accounting and business software applications and the fact that doing all of one's bookkeeping on a computer has both positive and negative aspects, it remains the most prevalent method.

As per teacher respondents, the strengths of ABM educational software include accounting software systems provide advantages to train ABM students in their future work where they find difficult to handle most accounting responsibilities. There is a diverse selection of user-friendly accounting software solutions available.

Most today's most popular software packages are intuitive and easy to use. Teacher-participant 3 said, "It's easy to use, so students can have vivid representation in their minds on using the system and can be a tilt of use in terms of advancement". Because the calculations are correct and trustworthy, the students may reliably

and properly calculate the amount of cash and other accounting items that are accessible at any given time which is very usable for students to use.

A variety of software applications in schools might provide business students the unlimited access to an accounting system's data. This enables the learners to swiftly balance their finances and import the right information that must be evaluated by their key advisers. As Teacher-participant 2 mentioned, "This will be a training ground for students in the real business and accounting field to hover exploration and convenient use of software's in tallying and entering data".

On the other hand, the respondents perceived weaknesses include - there are occasions when the utilization of ABM software leads to lower level of teacher's readiness in the learning process. One teacher-participant said, "Sometimes, I find it difficult to integrate the software in the crafting of lesson plan". Teachers felt unprepared which at times may hinder the learning process'.

The curriculum guide used by the teachers in the present times includes a limited integration of accounting software. 'Curriculum developers must also update the existing curriculum specifically in ABM discipline. Theories are substantial, but in this era, an advance curriculum that gives highlight to the 21st century skills must be given an utmost importance', as Teacher-participant 5 exclaimed. While this situation needs a strong call to the curriculum planners, a work immersion must be a great way to alleviate this predicament. A teacher-participant mentioned,

> [...] before the pandemic, one way for our students to better learn the software is through exposing them to the actual work setting, but because of some restrictions, there must be a work immersion action plan tailored in the current situation we are in.

Work Immersion is indeed needed by the SHS ABM students so that they can master the skills required in their major in preparation for a job (Alcobendas, 2022).

Another is the teacher's familiarity in the use of software. "For me, training is one of the lacking expertise that our school must offer. It is a must to mobilize the teaching strategies of teachers since it could affect the academic performance of the students [...]", Teacher-participant 7 said. Through participating in various seminars and trainings, teachers will become an advocate of quality education. They will gain knowledge from an experiential learning process and will have an expertise in the use of ABM software.

Proper planning and software integration can help students avoid computerized accounting's shortcomings. "I think student development is one that we should also focus on especially in the usage of digital tools [...]", Teacher-participant 5 shared. Immersing the students with the various activities that will sharpen their skills in ABM academic discipline is a steaming factor to mould them holistically that will contribute to building the action.

It has been noted by the researcher that all the accounting software can be purchased online for free subscription under the Philippine Department of Education (DepEd) Account Gsuite. Thus, this further implies that the teachers specifically in public schools have a free unlimited access to an instructional tool which may help them to an effective teaching.

Conclusion

The study evaluated the digital competence of the senior high school teachers in using educational software in teaching ABM courses. It specifically determined the level of competence of the ABM teachers in using such ABM educational software in terms of frequency of use, and capability of utilizing the educational software; and assessed their level of digital competence in the five aspects. Findings show that teachers always use MS Excel in teaching ABM courses. However, they rated all the other software application with 'almost never' to 'never'. With this, they appear to be Very Much Capable of using MS Excel and they need assistance in all the other software mentioned in the study.

Furthermore, ABM teachers have a high to very high level of digital competence in all of the five aspects such as (a) technology literacy in the everyday work of a teacher, (b) knowledge deepening in the everyday work of a teacher, (c) knowledge creation in the everyday work of a teacher, (d) technology literacy, and (e) knowledge deepening.

Therefore, the ABM teachers are very capable of using educational software needed in their everyday work but not on software needed to assist them in the teaching-learning process. Despite the availability of these educational software, their lack of training and hands-on experience in the use of each of these software limits their capability of applying them in teaching ABM courses. Thus, this study has implications not only for ABM

teachers who play a significant role in equipping the future workforce in the field of ABM. But this study calls for continuous support from the DepEd. This sector must provide trainings and assistance to teachers' digital competencies particularly in the utilization and proper integration of educational software to the various ABM subjects. Together with school leaders and administrators, they must provide opportunities for the teachers to receive hands-on trainings where tool kits and manuals will be provided. Such ongoing initiatives will lead to better and quality education where learners are equipped to dive into the digital world of ABM.

In relation to the limitation of the study, future research can expand the scope of the study by coming up with an instructional design for the utilization of the software and see how it will improve the performance of the ABM students. It would also be interesting to capture qualitatively the experiences of the learners in the digital classroom revolution where the educational software is the dominant factor in the creating a more engaging and interactive ABM classroom.

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