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Teaching Competency in the Digital Era in Indonesia, Malaysia and the Philippines

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Abstract

This study investigated the challenges of teaching in the digital environment and identified digital competency among lecturers in higher learning institutions in the digital era. The survey was carried out from April to September 2022 with 155 valid responses among 200 lecturers, 77.5% response rate from private and public higher learning institutions from Indonesia, Malaysia, and the Philippines. PLS-SEM was used to analyse the survey results and hypothesis testing was conducted through bootstrapping. Among the seven hypotheses proposed, six were accepted and one was rejected, which was the development of digital learning resources towards competency teaching in the digital era.

Keywords: teaching competency, digital era, higher learning institutions, PLS-SEM

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1.0 Introduction

The education sector is one of the most affected sectors by the COVID-19 pandemic. The uncertainty of opening the schools due to the outbreak has drastically transformed classrooms from traditional face-to-face into an engaging digital online learning experience. Indeed, this transformation process is unprecedentedly challenging, as schools are unprepared and caught up off guard. Nonetheless, teaching and learning progressed slowly but steadily as one learned to adapt to the presence of virtual classes via Google Meet, Google Classroom, Microsoft Teams, Zoom and other online platforms for almost two years. Southeast Asian countries have their individual teaching competency standard for teaching purposes. In most cases, the standard is designed by the respective country's Ministry of Education. This teaching standard aims to produce high-quality teachers in classrooms. It was also a testament to the Southeast Asian Ministers of Education Organization Regional Center for Educational Innovation and Technology (SEAMEO INNTECH) to develop and improve

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regional teacher quality (SEAMO, 2011). In particular, all eleven countries in Southeast Asia have their own policies in supporting the development of teaching competency standard in their respective countries. Brunei and Thailand topped the chart with three policies in teaching competency standard compared with others ASEAN peers. On the other hand, Timor-Leste is the most backwards country as their teaching competency standard is still in the formation stage. While Malaysia and Indonesia are both having one policy in teaching competency standard while Philippines have two policies in teaching competency as shown in Table 1.

Table 1: Policies Supporting the Development of Teaching Competency Standards in Southeast Asia Countries (SEA) before COVID-19

Country	List of Policies		
Brunei Darussalam	The Education Order 2003	10-Year Strategic Objective, 2006-2015	National Vision or <i>Wawasan Brunei</i>
Cambodia	The National Policy for Curriculum Development 2005-2009	Education Strategic Plan (ESP)	
Indonesia	The National Education System Law No.14		
Lao PDR	The Teacher Education Strategy	A National Charter of Teacher Competencies	
Malaysia	Education Development Plan (MEDP) 2001-2010		
Myanmar	Naing Nyan Education Committee (MEC)		
Philippines	1994 Republic Act 7784	DepEd Order No 32. s. 2009	
Singapore	The Educational Performance Management System (EPMS)		
Thailand	Constitutions of the Royal Kingdom B.E. 2250 (2007)	National Education Act B.E. 2542	The Council of Teachers B.E. 2546
Timor-Leste	Still in formation stage		
Vietnam	Educational Development Strategy 2001-2012		

(Source: SEAMO, 2011)

1.1 Problem of Study

Though it may seem advantageous to teach without the need to be physically present in the classroom, the higher learning institutions' lecturers' preparedness for doing such is an important question that needs to be answered. Thus, as online teaching is relatively new for most educators, it poses challenges and issues that have not been explored and studied in the past decades. As such, this study focuses on the challenges of teaching in the digital environment by identifying the digital competency among lecturers in higher learning institutions.

1.2 Objectives of Study

The research investigates the challenges faced while teaching in the digital environment and identifies the digital competency among lecturers in higher learning institutions in the digital era.

2.0 Literature Review

The advent of the COVID-19 pandemic has changed every aspect of human life, and education is a heavily affected sector. During the pandemic, the repercussions are that schools, e.g., higher institutions, need to be closed to reduce the close contact between humans. This closure causes around 1.2 billion children to be out of the classroom (World Economic Forum, 2020). Traditional teaching needs to be revamped to suit students' needs to solve this issue. From the traditional face-to-face classes, the world started to embrace online classes, which can be accessed anywhere worldwide. The substantive situation highlights the significance of technology integration in education and calls for lecturers to upgrade their competencies to digitalisation.

2.1.1 Adoption of digital technology and competency teaching in the digital era

Adopting digital technology is essential for developing competence in teaching, especially when faced with conditions like COVID-19 (Cortés, Rivera & Carbonell, 2022; Orji, Ojadi & Okwara, 2022). The adoption of digital technology that was carried out during COVID-19 was necessary for every lecturer to develop teaching methods online. Therefore, lecturers who are ready to adapt and adopt technology could improve their teaching competence in a shorter period.

H1: The adoption of digital technology has a significant effect on competency teaching in the digital era.

2.1.2 Development of digital learning resources and competency teaching in the digital era

In the digital learning process, learning resources are one of the crucial elements besides lecturers (Pringle et al., 2022; Sowl, Amrein-Beardsley & Collins, 2022). Learning resources can be interpreted as everything that can be used for learning, including increasing competence in teaching in the digital era. Sources of internal learning come from many, in this case: people, the environment and the media. However, due to pandemic, most lecturers need digital learning resources to improve their competence.

H2: The development of digital learning resources has a significant effect on competency teaching in the digital era.

2.1.3 Facilitating digital learning and competency teaching in the digital era

Facilitated learning is a step every teacher must take to improve their competence. The facilities owned must come from the institution and the individual teacher (Apostolidou, 2022; Jones, Smith & Durham, 2022). The institution is obliged to improve its facilities so that in carrying out the teaching process, there is an increase in its competence (Vishnu et al., 2022; Wang et al., 2022). In addition, the facilities of self also necessary to be improved. Facilities from within are obtained other than from institutions such as webinars, online seminars, or workshops to increase their capacity.

H3: Facilitating digital learning has a significant effect on competency teaching in the digital era.

2.1.4 Communication skills in digital learning and competency teaching in the digital era

Communication skills are fundamental in improving teaching competence in the digital era (Cornelissen, 2011, 2014). This is due to the very primary difference between communicating with students in online and offline conditions. Other problems such as lack of motivation, issues that arise from poor communication, and lack of interest were also observed, along with the significant issue of Internet connectivity, especially in rural areas or among the disadvantaged and vulnerable populations (Bishop-Monroe et al., 2022). Therefore, every teacher is required to make communication transformations that are simpler, easy to understand, and during the pandemic, they need to understand each student's health condition, so that knowledge transfer can be carried out effectively.

H4: Communication skills in digital learning have a significant effect on competency teaching in the digital era.

2.1.5 Numeracy skills in digital learning and teaching and competency teaching in the digital era

Numeracy skills are critical skills in the digital era. Numeracy skills are needed by every lecturer to understand the various curricula that are owned by each country (Loneragan, Cumming & O'Neill, 2022). Therefore, this skill is needed by every lecturer so that it can be transferred to every student being taught. The purpose is to ensure each student can improve their understanding of the content area and demonstrate their knowledge and understanding (Shaikh et al., 2022). Learning in digital technologies requires students to recognise and understand the role of mathematics and have the disposition and capacity to use mathematical knowledge and skills purposefully as they create digital solutions for various purposes. Lecturers must interpret and use mathematical knowledge and skills in various real-life situations. Therefore, each teacher's numeracy skills can improve teaching competence.

H5: Numeracy skills in digital learning have a significant effect on teaching and competency teaching in the digital era.

2.1.6 Problem-solving skills in digital learning and competency teaching in the digital era

Problem-solving skills are the ability to analyse problems and find practical solutions to solve these problems. This ability is vital in the world of work (Zhang, Mervin and Mohammed, 2021; Carvalho & Santos, 2022). These skills are fundamental when making decisions and solving problems, both for unexpected and unexpected problems. Problem-solving is also very much needed, especially in digital learning. Many conditions require lecturers to solve problems, particularly in teaching during the pandemic (Bishop-Monroe et al., 2022). Every lecturer must be able to adapt to different conditions, especially while online, create strategies appropriate to the conditions of students and understand the condition of children who are unable to adapt to these changes. Therefore, problem-solving skills in digital learning can improve teaching competency in the digital era.

H6: Problem-solving skills in digital learning have a significant effect on teaching and competency teaching in the digital era.

2.1.7 Teamwork skills in digital learning and competency teaching in the digital era

Collaborative problem-solving can potentially deploy social interaction and teamwork skills (Carvalho & Santos, 2022). Teamwork skills are needed by every lecturer in learning and teaching students their knowledge. Teamwork is an innovative method that was discovered to encourage high-order cognitive skills and improve soft nursing skills such as critical thinking, problem-solving, decision-making, teamwork, and communication skills development. It is crucial for every lecturer to strengthen networking and collaboration so that teamwork skills are better well-honed (Wang et al., 2022; Widad & Abdellah, 2022). Particularly during the pandemic, it is intuitive for every lecturer to improve teamwork skills as connecting networks and collaborations can only be done online.

H7: Teamwork skills in digital learning have a significant effect on competency teaching in the digital era.

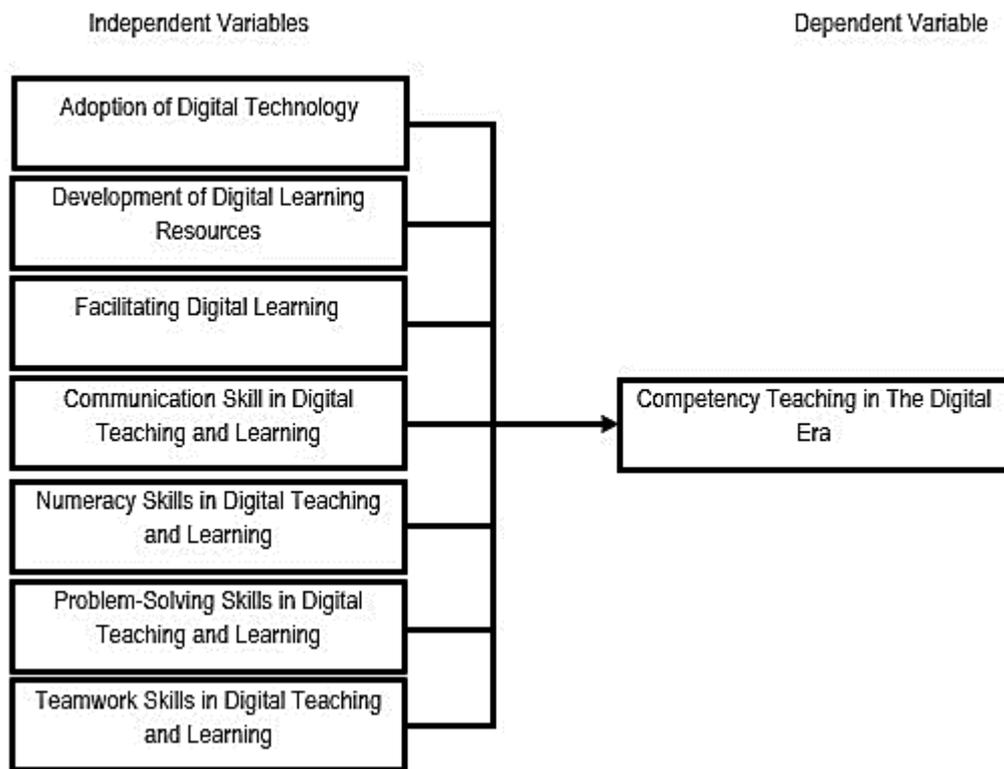


Fig. 1: Research Framework
(Source: Authors)

3.0 Methodology

A cross-sectional study is used to explore the attributes of teaching competencies in the digital era by a researcher-administered questionnaire survey from 155 lecturers or instructors in higher learning education institutions in Indonesia, Malaysia and the Philippines. These countries were selected because they are middle-income countries with a growing education system which focuses on improving the quality of their education system (Asian Development Bank., 2011). The required sample size for this research is determined using G Power software version 3.1.9.6 with a minimum of 153 respondents. The predictors were set at 7 with a confidence level of 95%. The study employed a convenience sampling method to acquire the sample. Moreover, institutions were sought through email to distribute the research instrument and get as many target respondents as possible.

3.1 Demographic Profile

The survey data was analysed using the partial least squares structural equation modelling (PLS-SEM) technique. There were 155 valid responses, with a 77.5% response rate from private and public higher learning institutions from Indonesia, Malaysia, and the Philippines. The details are shown in Table 2.

Table 2: Socio-demographic profile of respondents

Variables	Frequency	%
1) Gender: (n=155)		
Male	52	33.5
Female	103	66.5
2) Age: (n=155)		
21-30	20	12.9
31-40	61	39.4
41-50	44	28.4
51-60	26	16.8
61 and above	4	2.6
3) Education Level: (n=155)		
Bachelor's degree	17	11
Master	72	46.5
DBA	2	1.3
PhD	62	40
Others	2	1.3
4) Marital Status: (n=155)		
Divorced	2	1.3
Married with a child	16	10.3

Married with a child	77	49.7
Married without children	8	5.2
Single	50	32.3
Widowed	2	1.3
5) Nationality: (n=155)		
Indonesia	47	30.3
Malaysia	63	40.6
Philippines	43	27.7
Others	2	1.32
6) Position Held:(n=155)		
Professor	14	9
Associate Professor	11	7.1
Assistant Professor	18	11.6
Senior Lecturer	36	23.2
Lecturer	71	45.8
Tutor	5	3.2
7) Field of Study:(n=155)		
Arts and Humanities	12	7.7
Business	37	23.9
Chemistry	1	0.6
Economics	23	14.8
Education	25	16.1
Engineering	3	1.9
Hospitality and Tourism	6	3.9
Technology and Innovation	9	5.8
Linguistic	3	1.9
Medicine	10	6.5
Others	26	16.8
8) Teaching Experience in HEIs: (n=155)		
< 2 years	15	9.7
2 – 5 years	44	28.4
6 – 10 years	31	20.0
11 – 15 years	27	17.4
16 – 20 years	20	12.9
21 years and above	18	11.6
9) Country of Work: (n=155)		
Indonesia	47	30.3
Malaysia	64	41.3
Philippines	43	27.7
Others	1	0.6
10) Employment History: (n=155)		
Government Sector	109	70.3
Private sector	46	29.7

(Source: Authors)

4.0 Findings

After satisfying the measurement model's reliability and validity tests, the structural model was assessed in terms of the strength, direction, and significance of the hypothesized relationship in the conceptual framework, as shown in Figure 2 and Figure 3. The construct of facilitating in digital learning ($\beta = 0.283$, $t = 4.775$, $p = 0.000$), communication skills in digital teaching and learning ($\beta = 0.182$, $t = 2.252$, $p = 0.024$), numeracy skills in digital teaching and learning ($\beta = 0.131$, $t = 2.017$, $p = 0.044$), problem-solving skill in digital teaching and learning ($\beta = 0.277$, $t = 2.995$, $p = 0.003$), teamwork in digital teaching and learning ($\beta = 0.299$, $t = 3.327$, $p = 0.001$) have statistically significant positive relationship with competency teaching in the digital era, and adoption of digital technology ($\beta = -0.209$, $t = 2.519$, $p = 0.012$) has statistically significant negative relationship with competency teaching in the digital era, thus supporting H1, H3, H4, H5, H6 and H7 respectively as indicated in Table 4. However, the development of digital learning resources ($\beta = -0.001$, $t = 0.012$, $p = 0.990$) was not supported by the data, thus rejecting H2. In short, the six predictors collectively explained 81.3% ($R^2=0.813$) of the variance for competency teaching in the digital era.

Table 3: Results of Measurement Items

Model Construct	Measurement Item	Loading	CR	AVE
Adoption of Digital Technology	1. I am comfortable when using technology.	0.816		
	2. I can troubleshoot fundamental technology problems.	0.894		
	3. I am able to learn how to use new technology and software independently.	0.779	0.928	0.721
	4. I know how to select the most appropriate technology based on learners' culture and local practice.	0.795		
	5. I am able to use the features of the technology to enrich the learning process.	0.863		
Development of Digital Learning Resources	1. I can develop digital learning materials to meet specific learners' needs.	0.862	0.935	0.743

	2. I can apply problem-based learning to develop a learner's high-level knowledge and skills.	0.903		
	3. I am able to develop digital learning materials even with limited knowledge of the learner's background.	0.838		
	4. I can develop high-quality digital learning materials in the online platform provided.	0.882		
	5. I am able to modify the digital learning materials to meet specific learners' needs.	0.750		
Facilitating Digital Learning	1. I am able to formulate good questions when interacting with the learners.	0.812		
	2. I respect different learner types and accommodate different learning styles.	0.821		
	3. I encourage innovation and creativity in digital learning.	0.778	0.912	0.674
	4. I encourage learners to use digital technology responsibly.	0.856		
	5. I encourage social interaction between learners.	0.846		
Communication Skill in Digital Teaching and Learning	1. I use appropriate non-verbal communication when interacting with learners by switching on my webcam.	0.838		
	2. I am able to use various digital tools to enhance communication while teaching.	0.850		
	3. I am able to vary my tone of voice to enhance the online teaching and learning experience.	0.843	0.914	0.682
	4. I am able to communicate at the level of the learners.	0.743		
	5. I am able to deliver information in different digital channels and formats.	0.841		
Numeracy Skills in Digital Teaching and Learning	1. I am interested in reading and understanding tables, charts, graphs and numbers.	0.772		
	2. I am capable of reading scales on measuring equipment.	0.816		
	3. I am able to construct and label tables, charts and graphs.	0.894	0.936	0.747
	4. I am able to search and collect relevant information from different sources online.	0.779		
	5. I am able to explain terms and concepts numerically.	0.795		
Problem-Solving Skills in Digital Teaching and Learning	I am able to teach in multicultural virtual classrooms.	0.863		
	I can satisfy learners with special needs in the digital learning environment.	0.862		
	I will explore alternative ways when encountering digital teaching and learning problems.	0.903	0.908	0.665
	4. I am able to accept digital transformation in teaching and learning.	0.838		
	5. I am able to identify a technological problem and look for a solution promptly.	0.882		
Teamwork Skills in Digital Teaching and Learning	1. I am able to consult others in digital teaching and learning.	0.750		
	2. I always take the initiative to solve conflicts occurred in group work.	0.812		
	3. I am willing to share constructive feedback and show empathy in the digital teaching and learning environment.	0.821	0.940	0.757
	4. I find it easy to work virtually with my team.	0.778		
	5. I can benefit from the digital teaching and learning environment by sharing information with other lecturers.	0.856		
Competency Teaching in The Digital Era	1. I have contributed to developing learners' personalities and general behavior.	0.846		
	2. I have demonstrated a positive attitude towards learners and respect them.	0.838		
	3. I have contributed to the diffusion of the latest knowledge and trends to ensure my learners' and colleagues' acquisition of knowledge.	0.850		
	4. I believe professionalism significantly affects lecturers' performance, which in turn reflects positively on learners.	0.843	0.959	0.661
	5. I have contributed to cultivating my students' intellectual abilities and helped consolidate knowledge.	0.743		
	6. I have placed learners at the center when designing and structuring educational material.	0.841		
	7. I have contributed to the development of knowledge and the progress and growth of society.	0.772		

8. I have contributed scientifically to developing the quality indicator in my institution.	0.816
9. I have contributed to the learners' knowledge absorption and avoided misunderstandings with learners and colleagues.	0.894
10. I believe that with the right communication competencies, interaction and communication between people become effective and meaningful.	0.779
11. I have contributed to achieving educational goals and facilitated communication between lecturers and learners through digital technology.	0.841
12. I have contributed to properly examining and assessing digital tools as potential means for learning and teaching.	0.772

(Source: Authors)

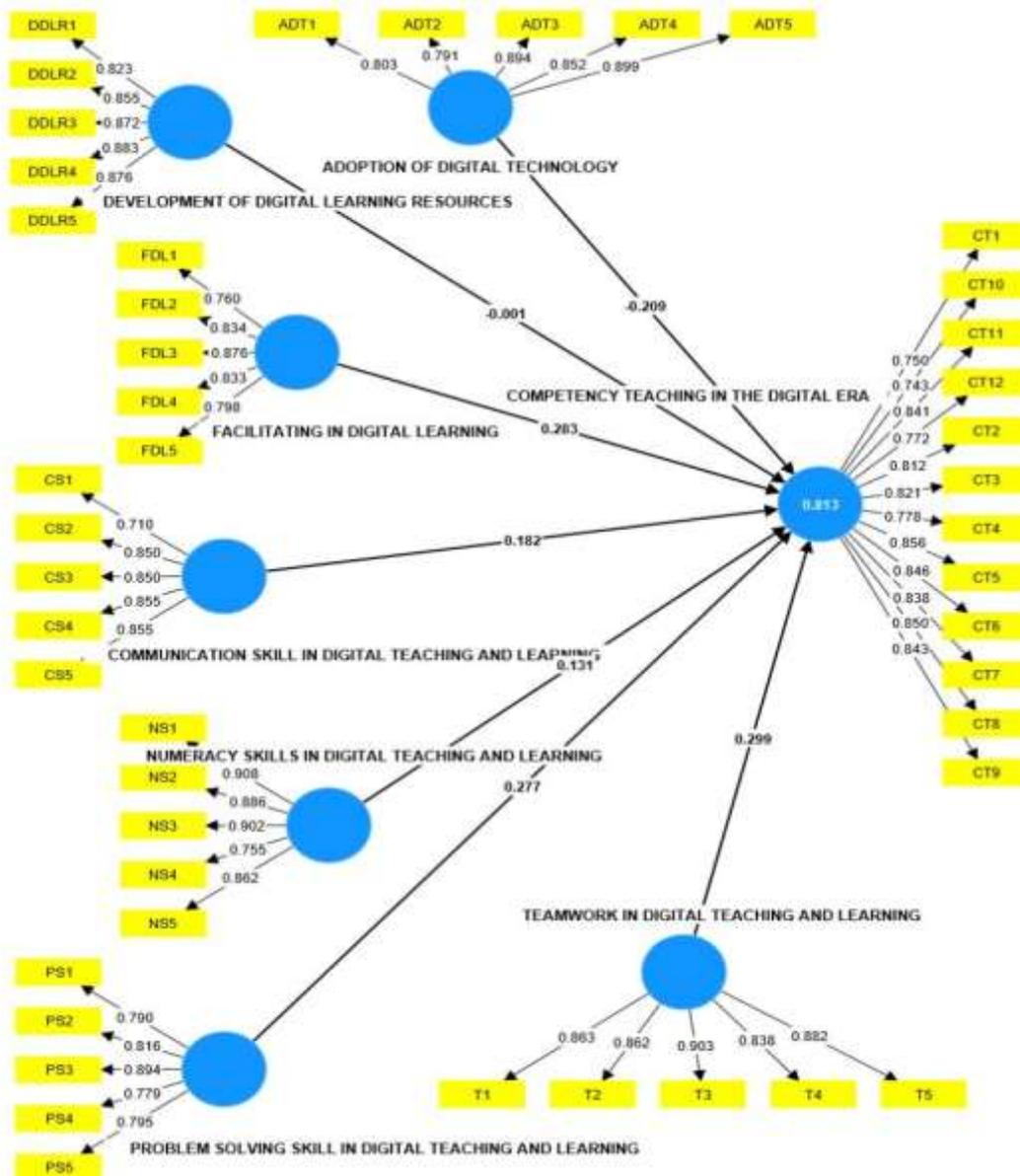


Fig. 2: Results of the Path Analysis
(Source: Authors)

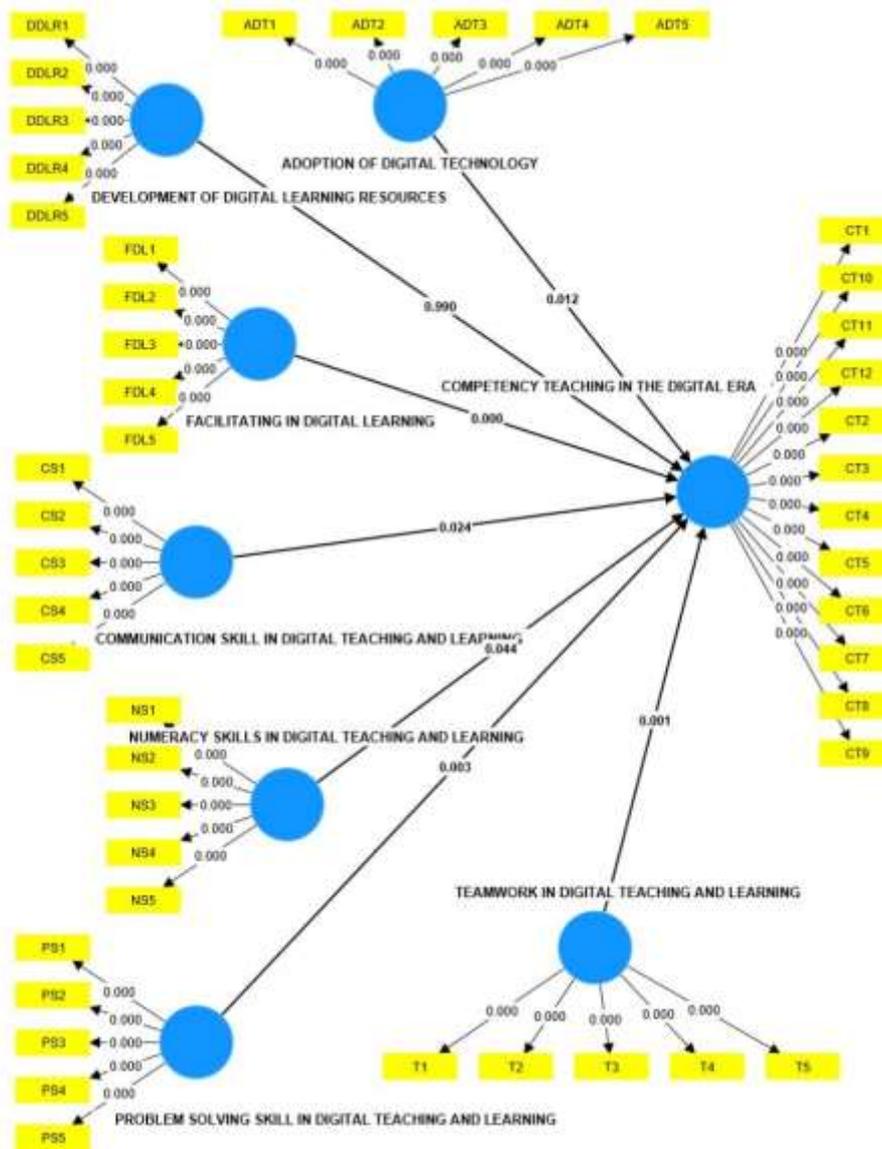


Fig. 3: Results of Bootstrapping
(Source: Authors)

Table 4: Results of Hypothesis Testing

Hypothesis	Relationship	Coefficient	t-value	P-value	Decision
H1	Adoption of Digital Technology -> Competency Teaching in The Digital Era	-0.209	2.519	0.012**	Accepted
H2	Development of Digital Learning Resources -> Competency Teaching in The Digital Era	-0.001	0.012	0.990	Rejected
H3	Facilitating in Digital Learning -> Competency Teaching in The Digital Era	0.283	4.775	0.000***	Accepted
H4	Communication Skill in Digital Teaching and Learning -> Competency Teaching in The Digital Era	0.182	2.252	0.024**	Accepted
H5	Numeracy Skills in Digital Teaching and Learning -> Competency Teaching in The Digital Era	0.131	2.017	0.044**	Accepted
H6	Problem Solving Skill in Digital Teaching and Learning -> Competency Teaching in The Digital Era	0.277	2.995	0.003***	Accepted
H7	Teamwork Skills in Digital Teaching and Learning->Competency Teaching in The Digital Era	0.299	3.327	0.001***	Accepted

***significant at the level 1%; **significant at the level 5%

(Source: Authors)

5.0 Discussion

Based on the findings, it was found that the adoption of digital technology is not necessarily related to competency teaching in the digital era. It could be due to technology usage and applications in higher learning institutions that have become an imperative element in classroom delivery. Thus, the relationship between adoption and competency contradicts the general perception that higher technology adoption leads to better competency teaching. On the other hand, developing digital learning resources was not relevant to competency teaching in the digital era. This could be because existing resources were sufficient to support the teaching and learning process, and further improvement on the digital resources was deemed unnecessary or unimportant. These findings are aligned with Anderson, (2008) in his e-learning model states that the quality of online learning is learning-centred, assessment, community and knowledge. The model emphasizes the interaction between teacher and learner, and the six forms of learning interaction between them and the content. Hence, the development of digital resources might not be crucial in an urban area, where society is open to technology but it is important to implement it in the rural area, as this might be a new technology for them.

The results of this study also found that problem-solving skills have abilities to analyse problems and find practical solutions to solve these problems. This ability is vital in the world of work (Zhang, Mervin and Mohammed, 2021; Carvalho & Santos, 2022). These skills are fundamental when making decisions and solving problems, both for unexpected and unexpected problems. Problem-solving is also very much needed, especially in digital learning. These conditions require lecturers to solve problems like teaching during the pandemic (Bishop-Monroe et al., 2022). Every lecturer must be able to adapt to different conditions, especially while online, create strategies appropriate to the conditions of students and understand the condition of children who are unable to adapt to these changes.

6.0 Conclusion and Recommendation

The study established that teaching competency in the digital era developed through adopting digital technology and facilitating learning by digital means. Digital technology benefits higher learning education by offering more options for teachers to deliver their lessons efficiently and effectively. Moreover, the findings revealed the significant impact of communication, numeracy, and problem-solving skills in teaching competency in higher education in the digital era. Soft skills are essential in the digital age in fulfilling higher education goals for employability, personal development, and being productive members of society. The findings highlighted the role of digital technology in developing teamwork through interactive discussion and collaboration between students. Students can build connections and an online community while learning via digital means. Quality education for all at the forefront of United Nations' Sustainable Development Goal 4 Quality Education can be achieved by providing support to teachers and educational institutions and investing in upgrading their skills. Likewise, benefactors of higher education institutions may take a strategic approach by capitalising on the digital transformation which will produce a more digitally savvy education workforce and more importantly competent and global-ready students. This study contributes towards the ASEAN higher education roadmap and aligns itself with ASEAN Digital Masterplan 2025, ASEAN Declaration on Human Resource Development in the Changing World of Work, Declaration on Digital Transformation of Education System in ASEAN and ASEAN Comprehensive Recovery Framework. These regional initiatives are against the backdrop that changed the landscape of higher education not only in the ASEAN but all over the world including the disruption of student mobility caused by the emergence of the Covid-19 pandemic.

7.0 Suggestion for Future Research

There are limitations in the study. First, the distribution of respondents is concentrated in the capital cities of Malaysia, Indonesia and the Philippines (i.e: Kuala Lumpur, Jakarta and Manila) only. Hence, future researchers may conduct in-depth studies in the nearby cities and provinces of these countries. Secondly, the study did not include other Southeast Asian countries, thus future studies should include more representative countries from Thailand, Cambodia, Vietnam, Brunei and so forth. It is interesting to know and to compare the level of competency to teach in the digital era for these teaching workforces in different economic entities. More importantly, different research approaches can be applied to highlight and differentiate various teaching competency standards in these countries in qualitative forms.

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Paper Contribution to Related Field of Study

Policymakers should recognise the long-term benefits of digital technology in teaching competency in higher learning institutions.

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