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Do Digital Competency and Self-Leadership Influence Teachers' Innovative Work Behavior?

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Abstract: This study investigates whether digital competency and self-leadership influence teachers' innovative work behavior in Islamic International schools. The participants in the quantitative research were 108 teachers from the Islamic International School, who were selected using saturated sampling. The researchers used a 41 items questionnaire to collect data on the study variables. Quantitative data were analyzed by applying structural equation modeling partial least squares (SEM-PLS) using Smart-PLS 3. According to the study's findings, digital competency has a positive and significant impact on innovative work behavior, while self-leadership also has a positive impact that significantly influences innovative work behavior. Overall, the impact of digital competency and self-leadership simultaneously was 0.584 or 58.4%, while the other variables not tested in this study influenced the other 41.6%. This research emphasizes schools to improve building their teachers' innovative work behavior and for teachers themselves through training, self-development programs, building knowledge sharing among teachers and school leaders, and open ideas about developing pedagogical and sustainable programs for schools.

Keywords: *Digital competency, innovative work behavior, self-leadership.*

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Introduction

The current state of the world's changing environment is called Volatile, Uncertain, Complex, and Ambiguous (VUCA; Canzittu, 2020). VUCA refers to unpredictable changes and complex characteristics in either conditions or situations. In the business world, VUCA is a synthesis of the turbulence of changing circumstances (Malaval, 2018). Yehezkel and Kozlovsky (2020) emphasizes that the upheaval will affect all areas, including education. The education area requires major development with changing needs for massification and standardization (Canzittu, 2020).

Millar et al. (2018) recommend ten areas to focus on in management under VUCA conditions, including innovation and leadership. Innovation refers to looking beyond what we are currently doing and expanding innovations to make our work easier in new modes (Lian & Amiruddin, 2021). Innovations in the education sector are carried out to increase productivity and efficiency while conducting learning activities and enhance the quality of learning through various updates in pedagogical theory, teaching techniques, methodological approaches, learning equipment, learning activities, and the institution's structure (Serdyukov, 2017). Additionally, a teacher's main mission is not only about presenting the learning material but is also emphasized more toward learning activities to encourage students to become more active. Furthermore, learning can activate students' needs and force teachers to be creative and innovative in arranging learning activities so that all students are attracted and motivated to participate in learning (Palimbong et al., 2022).

As educators in schools, teachers are at the forefront of innovation in teaching. Therefore, teachers must be able to innovate and prepare themselves with the necessary skills to face changes. The ability of a teacher to innovate helps enhance the quality of learning activities, which is associated with improving overall educational quality (Prasetya et al., 2020). The ability to innovate must also be expressed in the teacher's behavior as an employee. This ability is related to innovative work behavior, which refers to employees' contributions to the development of innovation, including all work activities related to the development of innovation.

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Innovative work behavior refers to actions taken to create new changes to achieve educational goals and improve the quality of education (Fahrurazzi, 2020). According to Johari et al. (2021), innovative work behavior is considered the primary driver of educational improvement, as teachers who exhibit innovative work behavior are categorized as creative educators who offer ideas to enhance school performance.

In the 21st century, there is a crucial aspect of the educational world: teachers must possess a sense of creativity to construct learning and innovative behavior by integrating technology into learning activities, manifested in the form of competence (Herliani & Wahyudin, 2018). Competence is the knowledge and capabilities gained by absorbing, mastering, and utilizing the work and social environment to form value through various tasks, such as carrying out work as efficiently as possible (Sudrajat, 2020). In teaching, a teacher's competence can be interpreted as the expertise, knowledge, behavior, and skills the teacher possesses (Mahendra, 2021).

In Indonesia, based on the Law on Teachers and Lecturers in 2005, competence consists of behaviors, skills, and knowledge that must be owned, implemented, as well as controlled by teachers in performing their assignments through four competencies, namely professional competence, social competence, personality competence, and pedagogic competence (Suharsaputra, 2016). In addition to these four competencies, the VUCA condition in the education field requires teachers to become professionals who can answer challenges and needs in the world of education (Prayogi & Estetika, 2019). This requirement is answered through the digital competency of teachers. Digital competency is an example of a mandatory skill in the 21st century for everyone, including teachers (Jarad & Shaalan, 2020). The application of digital competency in the education field is considered more difficult due to the fulfillment of the ability to use information and communication technology (ICT) and, at the same time, supporting pedagogical learning that can improve the quality of learning for students (Krumsvik, 2014).

In addition to digital competencies that teachers must have to build innovative work behavior in themselves, a teacher also needs leadership. A teacher is the new leader of the students in the class. Teachers are responsible for developing learning, inspiring students, managing students in the classroom, ensuring learning runs effectively, and being able to assess students. This responsibility is related to teacher activities as leaders, like influencing, stimulating, presenting a vision for students' future, playing a role as mentors, and community building (Nadelson et al., 2020). However, before acting as the classroom's leader, a teacher must have leadership in himself, which is called self-leadership.

The idea that each person is responsible for leading themselves is known as self-leadership, and those who can do so effectively will be more productive. According to Zambat et al. (2020), individuals who can maximize their self-leadership skills are better equipped to direct their work. Self-leadership is particularly important for teachers because it can increase their ability to communicate their values and improve classroom management skills. Cheung et al. (2018) suggest that self-leadership can help teachers develop their expertise in teaching, while Konuk (2017) and Özdemir (2020) argue that it can also empower teachers to take the initiative and contribute to the effectiveness of education.

This research investigates whether digital competency and self-leadership affect innovative work behavior. Previous studies have indicated that competency can enhance the ability to learn new skills and generate ideas in innovative work behavior (Chombunchoo & U-On, 2016). Qomatish and Syahrizal (2022) found that competencies are a crucial success factor that positively impacts innovative work behavior. Tamunosiki-Amadi and Ogoun (2018) also explored the relationship between competency and innovative work behavior, and their results suggested that having competence can improve employees' innovative work behavior. However, their research also reveals that while competence has a limited effect on idea generation and development, it significantly influences idea implementation. In contrast, Szczepańska-woszczyna and Dacko-pikiewicz (2014) contend that competencies are essential factors in successfully implementing innovations in companies. Although earlier research has defined competency as a combination of knowledge, skill, and attitude, no studies have explicitly focused on digital competency. Thus, this study aims to address this gap by examining competency based on digital competency.

A previous study by Carmeli et al. (2006) concluded that self-leadership positively impacts innovative work behavior. Individuals who exhibit self-leadership are likely to be innovative in their jobs. This study assumes that highly self-directed and motivated people are likely to be innovative in solving work-related problems. Research by Sauid and Kamarudzaman (2018) also shows the results of self-leadership has a positive effect on employees' innovative work behavior. Research by Ibus and Ismail (2018) also showed a conceptual framework of self-leadership in innovative work behavior. However, few studies have shown significant differences between self-leadership and innovative work behavior. In addition, most of the previous research has been conducted in the non-educational field. In contrast, this research examines the self-leadership teachers possess to build innovative work behavior in their teaching duties. In this study, we selected an Islamic international school in Indonesia under Foundation X composed of elementary, junior high, and senior high school teachers because of the school's high standards and qualifications for its teaching staff, which it claims focuses on developing innovations in the learning process.

Literature Review

Digital Competency

Competence is the ability of a person to organize and adapt from time to time a mixture of skills, abilities, and knowledge to successfully perform a task in the required work situation (Mondy & Martocchio, 2014). Regarding current competencies, one of the competencies needed is digital competency. Digital competency is a set of skills needed to make technology a positive influence (Marguna & Sangiasseri, 2020). Digital competency is related to a person's knowledge, skills, and attitudes to access, use, create, and share digital resources efficiently and communicate and collaborate with others using digital technology to achieve specific goals (Perifanou & Economides, 2019).

Teacher competencies are currently developing into digital competencies according to the needs of the times. The definition of digital competence in teachers is a group of skills and capacities that generate outcomes in the incorporation and adequate use of ICT for methodological resources, which is fused inside of the learning and teaching activities, thereby changing ICT learning technologies that can be implemented in schools.

This study uses dimensions derived from the research of Machmud et al. (2021) with the United Nations Educational, Scientific, and Cultural Organization (UNESCO) and the ICT Competence Framework for Teachers (ICT-CFT). A framework with a series of competencies was created by UNESCO that must be met to integrate technology with professional work as a teacher. The dimensions of digital competency are comprehending ICT for some purposes, such as digital skills, pedagogical, assessment and curriculum, education policies, organization, administration, and teacher professional perfection. The dimension of understanding ICT for education policies is understanding digital-based national education policies. The curriculum and assessment dimension emphasizes the superiority of teacher knowledge regarding curriculum standards, assessment strategies, and student characteristics that aim to create complex learning problems in measuring student understanding. The pedagogical dimension emphasizes the ability of teachers to understand the exact situation to apply digital learning to classroom activities. Also, it supports the teacher to play a role in imitating the learning activities, leading students to comprehend, and forming circumstances where students can enhance their capabilities.

The digital skills dimension emphasizes the ability of teachers to choose and judge appropriate digital learning resources and the media applied to teaching processes. The organization and administration dimension emphasizes guaranteeing internet access to all classes, including all individual and group activities, and implementing technology flexibly to assist collaborative learning. Finally, the teacher professional development dimension emphasizes teachers' ability to apply digital learning media to organize additional learning materials, develop their pedagogical knowledge, and collaborate with fellow teachers and experts in assisting teachers' professionalism.

Digital Competency and Innovative Work Behavior

Education requires innovation, and teachers are crucial in implementing the learning process. In addition, information and communication technology (ICT) supports innovative educational changes (Machado, et al., 2016). For teachers to integrate ICT into classrooms dynamically, they need digital competency to implement the learning process with critical, creative, and safe approaches. According to Pilav-Velic et al. (2021), there is a dual relationship between digital competency and the use of digital technology. Competence in digital technology is a determinant of performance, as competence in digital technology encourages involvement in the learning process. Teachers with digital competency are expected to adapt better to a constantly changing business environment and exhibit higher levels of innovative work behavior. Based on these arguments, we propose the following hypotheses:

H1: Digital competency has a positive and significant impact on influence Innovative Work Behavior

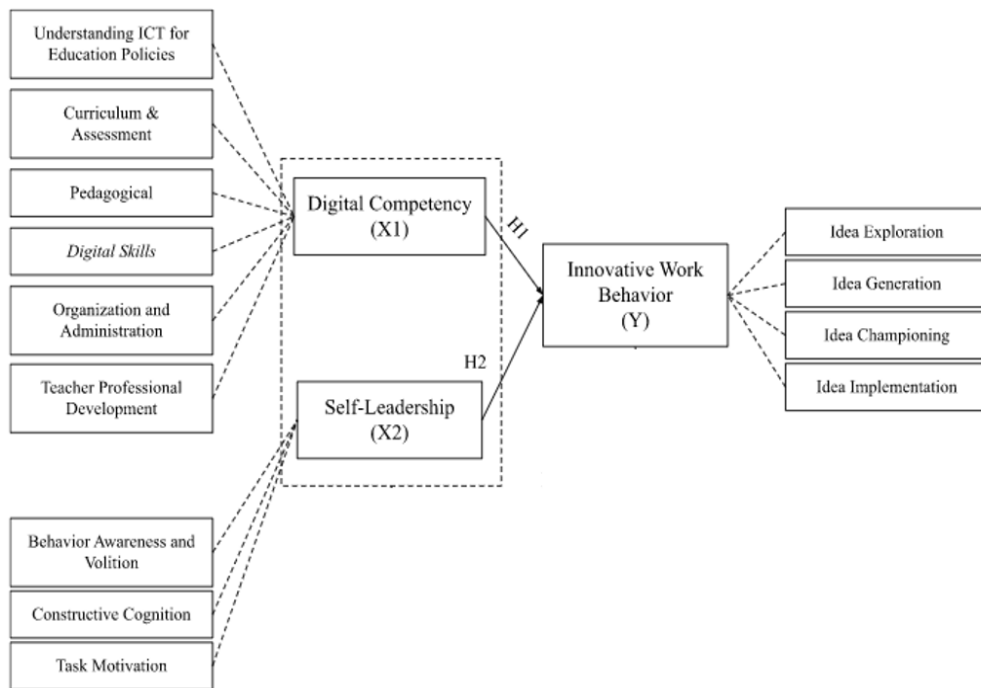


Figure 1. Research Framework

Self-Leadership

Self-Leadership is included in the academic science of Oekh Manz (1986) with his publication entitled "Self-leadership: Toward an Expanded Theory of Self-Influence Processes in Organizations," which says that self-leadership is a part of developing self-management related to the completion of work and how one reacts to it. Furthermore, Neck and Houghton (2006) clarify that self-leadership describes the process of affecting oneself through actions and making someone able to take and achieve the self-motivation and self-direction required to finish the assignment. Not only that, but self-leadership is also elaborated as leadership that organizes, motivates, and directs oneself, which is reflected through increased personal responsibility because self-leadership becomes part of the self-evalutaion’s process, and influence that changes the individual's feeling of inability, changes the structure of their thoughts from negative become positive (Özdemir, 2020).

Self-leadership is also interpreted as the ability to influence oneself in achieving the desired goals through several decisions that reflect the leadership level, namely good, bad, or open to self-development (Mustaffa & Ghani, 2020). In the organizational context, self-leadership acts as a continuous activity of a person directing themselves to achieve organizational goals. In a teacher's context, self-leadership is a component of forming a teacher's professional practice. The teacher plays a role in conveying and influencing students. Therefore, how teachers shape their worldviews and personality will directly impact their careers impression and affect every student they teach (Warren, 2021).

Self-Leadership and Innovative Work Behavior

Previous research has shown the influence of self-leadership on innovative work behavior. Research conducted by Gomes et al. (2015) showed that self-leadership significantly influences innovative work behavior. According to this study, employees who have developed self-leadership will motivate themselves to achieve better performance at work, solve problems, and identify problems and opportunities that become a catalyst for creativity, which generates innovative behavior from employees. The proportion of individuals building self-leadership can strengthen innovative roles and behavior within themselves (Kalyar, 2011; Pratoon & Savatsomboon, 2012).

In addition, research conducted by Sesen et al. (2017) on elementary school teachers showed that self-leadership significantly influences innovative work behavior. According to this study, teachers who have embraced self-leadership behaviors tend to exhibit greater dedication to the school, job satisfaction, and innovation, which entails the ability to evaluate oneself, motivate oneself, and set their own goals. However, Kor (2016) showed insignificant self-leadership results for innovative work behavior. Similar to Neck and Houghton's (2006) idea, there is a need to examine the connections between self-leadership, creativity, and innovation more closely. Previous research has been conducted in a different field. This research will focus on knowledge of self-leadership toward innovative work behavior towards

teachers at private international Islamic schools in Indonesia. Based on these arguments, we formulate the following hypotheses:

H2: Self-Leadership has a positive and significant impact on influence Innovative Work Behavior

Innovative Work Behavior

Innovative work behavior comes from the word 'innovation,' renewable with uniqueness and attractiveness (Mustika et al., 2020). One of the resources in the 21st century related to uniqueness and knowledge is the definition of innovation (Pusparini & Aryasa, 2021). In addition, innovativeness is the desire to provide experimentation and creativity for creating services, goods, excellence, technological innovations, and research findings to develop new processes (Lumpkin & Dess, 2001).

Innovation in one's work is called innovative work behavior, an activity or behavior carried out by a person or worker to develop their behavior to be innovative for completing work more effectively and efficiently (Begonja et al., 2016). The intentional invention, introduction, and implementation of new notions in either work groups, roles, or organizations to present an advantage toward the performance of either groups, roles, or organizations is also the definition of innovative work behavior (Sanz-Valle & Jiménez-Jiménez, 2018).

This study uses dimensions derived from Sari and Najmudin's (2021) research, known as idea exploration, generation, championing, and implementation. To elaborate, the exploration begins with a moment, such as the discovery of a chance or the appearance of a matter, which also includes the attitude of deciding appropriate methods to enhance a process, service, or product through alternative means. The second phase of the innovative work behavior dimension is idea generation, which refers to an attitude to establish ideas and concepts for improvement. Idea generation becomes a solution to an identified problem, looking for a new work method or technique of equipment, finding a new approach to doing a task. An idea championing is a situation when a notion has been successfully established. This situation includes behavior seeking support and forming alliances with stating belief and enthusiasm in innovation, tenacity, and negotiating successfully to bolster all initiated ideas for solving problems.

Methodology

Research Design

This study applies quantitative methods. In quantitative research, the knowledge generated is based on numerical data that has already been analyzed and acquired. In general, quantitative research, including statistical data analysis, is confirmatory and a priori (Thomas, 2021). A cross-sectional study is applied in this study, which means that the study is only carried out at a predetermined time until the study is complete (Hair et al., 2019).

Sample and Data Collection

This study involved a specific group of respondents. We explicitly chose teachers from the International Islamic School under Foundation X in Indonesia. The participants included elementary, junior high, and high school teachers. A saturated sampling approach was used, meaning the entire population of 108 teachers was included in the study. According to SEM-PLS guidelines, the sample size should be at least ten times greater than the possible path hypotheses. With three possible hypotheses identified in this study, a sample size of over 40 was required, and the study used 108 samples, meeting the SEM-PLS criteria.

During the data collection, the author distributed the questionnaires to teachers using Google Forms and paper-based questionnaires. The questionnaire was comprised of 41 questions and was translated into Bahasa. The author distributed the questionnaires to the principals of each school to ensure that all teachers received them. All items are measured on a five-point Likert scale, with "1" representing "strongly disagree" and "5" representing "strongly agree." Answering the questionnaire took approximately 40 minutes. Data was provided anonymously.

The digital competency questionnaire was adopted from Machmud et al. (2021) and consisted of dimensions based on the UNESCO ICT Competence Framework for Teachers (ICT-CFT). The self-leadership questionnaire was adopted from Siambi (2021), while the innovative work behavior questionnaire was adopted from Sari and Najmudin (2021). The questionnaire items used in this study can be found in Appendix 1.

Analyzing of Data

Structural Equation Modeling-Partial Least Square using Smart-PLS 3 software was applied to analyze the quantitative data within this study. Several things must be considered in analyzing quantitative data, namely reviewing the research framework, preparing data to be analyzed, determining whether the research uses descriptive analysis or hypothesis analysis, and analyzing and evaluating the results of data analysis (SEM-PLS; Thomas, 2021). The PLS-SEM model fit test relies on bootstrapping to decide the chance of gaining a discrepancy between the empirical correlation matrix and

the implied model as high as that obtained for the existing sample if the hypothesized model is true (Solihin & Ratmono, 2021).

In PLS-SEM, two stages must be carried out: testing the outer and inner models. The measurement model is the outer model, while the structural model is the inner model. The outer model consists of convergent validity, discriminant validity, and internal consistency reliability. The convergent validity value was obtained by examining the outer loading factor values and AVE results on endogenous and exogenous variables. Based on the criteria, the recommended value is the loading factor value of 0.7, which can be tolerated up to 0.5. The average Variance Extracted is used to see how the quality of the indicators is related to the research variables (AVE; Musyaffi et al., 2021). The criterion is the expected AVE value of 0.5. If these criteria are met, the construct can explain more than half the variance of the indicator.

Discriminant validity means that each reflective construct must share more variance with its indicators than other constructs in the path model (Hair et al., 2019). This research used Fornell Larcker by comparing the correlation of latent variables with constructs in the AVE. The test criteria are if the value of square roots or square roots must have a greater value than the construct in the variable compared to other construct variables (Musyaffi et al., 2021).

Cronbach alpha is an assessment of reliability used to measure the internal consistency of a variable. The resulting value is expected to be at least 0.7 based on the criteria but can still be tolerated up to 0.6. Composite reliability is also a part of internal consistency reliability to measure the reliability of an indicator. The resulting value indicates whether a built construct has reliability. Based on the criteria, the expected value is at least 0.7. If the value is 0.8, it can be concluded that the existing data has a high level of reliability (Musyaffi et al., 2021).

The inner model consists of inner VIF, coefficient of determination, and predictive relevance. The R^2 coefficient of determination test is used to examine the collective impact of the independent variables on the dependent variable. The R^2 value shows the degree of variation in the endogenous variable explained by the exogenous variable. A value of 0.67 or higher indicates a strong correlation, 0.33 signifies a moderate correlation, and 0.19 or lower indicates a weak correlation. Predictive relevance testing is implemented to discover a prediction's capability through a blindfolding procedure. Q^2 becomes a measure of the model's predictive power that checks if the model can predict data accuracy that is not applied within the approximation of model parameters (Hair et al., 2019). This characteristic makes Q^2 a measure of predictive power out of the sample. Based on the criteria, the value of Q^2 is categorized as small if it is 0.02, medium if 0.15, and large if 0.35 (Musyaffi et al., 2021).

Findings / Results

Respondent Characteristic

This study involved 108 teachers selected from elementary, junior high, and high school teachers in Indonesia's specified Islamic Foundation. The participants were divided into three groups: 60 elementary school teachers, 29 junior high school teachers, and 19 high school teachers. The demographic characteristics of the participants are presented in Table 1.

Table 1. Outer Measurement Model

Profile	Frequency	Percentage
Gender		
Men	64	59.3%
Women	44	40.7%
Age		
<25	13	12.0%
>25-30	27	25.0%
>30-35	32	29.6%
>35-40	24	22.2%
>40-45	5	4.6%
>45	7	6.5%
School		
Elementary School	60	55.6%
Junior High School	29	26.9%
Senior High School	19	17.6%
Education		
Bachelor	84	77.8%
Master	24	22.2%
Length of Employment		
<1 year	21	19.4%
>1-3 year	24	22.2%
>3-5 year	23	21.3%
>5 year	40	37.0%

The study examined the participant characteristics such as age, gender, education, school, and length of employment. The findings revealed that a majority of the respondents, comprising 59.3% of the total, were male, while the most common age range was between 30 and 35 years, with 29.6% represented by 32 teachers. The highest number of respondents belonged to the elementary school category, accounting for 55.6% or 60 teachers. Among the participants, 77.8%, or 84 teachers, had bachelor's degrees. Furthermore, most participants had been employed for more than five years, with 37.0% or 40 teachers being employed for this duration.

Outer Measurement Model

Table 2 shows the results of the outer model analysis for validity.

Table 2. Outer Measurement Model for Validity

Latent Variable	Manifest Variable	Outer Loading	VIF Outer	Result
Digital Competency	DC1	.730	3.719	Valid
	DC2	.756	4.932	Valid
	DC3	.738	2.647	Valid
	DC4	.798	4.469	Valid
	DC5	.604	2.923	Valid
	DC6	.656	3.556	Valid
	DC7	.679	2.612	Valid
	DC8	.610	2.565	Valid
	DC9	.680	2.089	Valid
	DC10	.664	2.243	Valid
	DC11	.700	2.635	Valid
	DC12	.676	2.806	Valid
	DC13	.639	2.349	Valid
	DC14	.641	2.362	Valid
	DC15	.694	2.845	Valid
	DC16	.601	3.079	Valid
	DC17	.623	3.819	Valid
	DC18	.577	3.518	Valid
	DC19	.615	2.663	Valid
	DC20	.754	2.646	Valid
	DC21	.749	2.895	Valid
	DC22	.709	2.395	Valid
Self-Leadership	SL1	.721	2.089	Valid
	SL2	.772	2.497	Valid
	SL3	.850	3.529	Valid
	SL4	.853	3.528	Valid
	SL5	.838	4.057	Valid
	SL6	.849	4.381	Valid
	SL7	.841	3.477	Valid
	SL8	.871	3.483	Valid
Innovative Work Behavior	IWB1	.778	3.528	Valid
	IWB2	.752	3.467	Valid
	IWB3	.828	3.913	Valid
	IWB4	.777	3.337	Valid
	IWB5	.838	3.629	Valid
	IWB6	.701	3.890	Valid
	IWB7	.559	3.309	Valid
	IWB8	.784	2.365	Valid
	IWB9	.790	3.019	Valid
	IWB10	.687	4.312	Valid
	IWB11	.684	4.576	Valid

Based on the calculation using Smart-PLS 3 in Table 2, the outer loading on all items is 0.5. This calculation follows the criterion that all the items are valid.

Table 3. Outer Measurement Model for Reliability

	AVE	CR	Cronbach Alpha	Result
DC	.507	.949	.944	Reliable
SL	.558	.932	.920	Reliable
IWB	.682	.945	.933	Reliable

Based on the calculation using Smart-PLS 3 above, the AVE results in the variable 0.5. This result is by the criterion that all variables have a high level of convergent validity. Composite reliability test results were obtained. From these calculations, it can be concluded that all the variables have a result of 0.9. Thus, the variables in this study met the criteria for composite reliability or could be considered to have a high level of reliability. The Cronbach's alpha test results were obtained through calculations using Smart-PLS 3, and all variables were found to have results greater than 0.7. Therefore, the variables in this study met the criteria for Cronbach's alpha and could be considered reliable.

Table 4. Heterotrait-Monotrait Ratio (HTMT)

	DC	IWB	SL
DC			
IWB	.674		
SL	.646	.768	

To assess the reliability of the correlation between two constructs, the Heterotrait-Monotrait Ratio test is used (HTMT; Musyaffi et al., 2021). Table 4 shows that all the constructs have an HTMT value below 0.9, which leads to the conclusion that the HTMT test is fulfilled.

Based on the Smart-PLS 3 calculations in Table 5, the Fornell Larcker test was conducted, and it was found that all variables have higher values than those below them. Therefore, the variables in this study meet the Fornell Larcker criteria. The following is a table of Fornell Larcker correlation scores in this study:

Table 5. Fornell-Larcker

	DC	IWB	SL
DC	.679		
IWB	.653	.826	
SL	.629	.720	.747

The Variance Inflation Factor value was used as a criterion reference to test for multicollinearity in this study. A VIF value <5.0 indicates no multicollinearity issue (VIF; Musyaffi et al., 2021). As shown in Table 1, the outer VIF test produced a value <5.0, indicating that none of the items in the study had multicollinearity issues.

Inner Measurement Model

The inner model was also subjected to a multicollinearity test. Table 6 shows that all VIF values in the inner model <5.0 indicate no multicollinearity issues with the research variable.

Table 6. Inner VIF

	DC	IWB	SL
DC		1.655	
IWB			
SL		1.655	

The table below displays the results of this study's coefficient of determination test.

Table 7. Coefficient of Determination

	R Square	R Square Adjusted
Innovative Work Behavior	.584	.576

Based on the Smart-PLS 3 calculation results presented in Table 7, the coefficient of determination was computed, yielding an R2 value of 0.584. This result suggests that the model has a relatively simultaneous solid effect at 58.4%, while the remaining 41.6% of the model's influence is caused by other variables not included in this study. The following table shows the results of the predictive relevance test in this study:

Table 8. Predictive Relevance

	SSO	SSE	Q ² (=1-SSE/SSO)
DC	2.376.000	2.376.000	
IWB	864.000	532.535	0.384
SL	1.188.000	1.188.000	

According to the calculation results of Table 8 applying Smart-PLS 3, the results of the predictive relevance test are obtained. From these calculations, the result of the Q² value is 0.384. This result means that it can be concluded that this study has a good observation value because the Q² value is in the category of extensive value criteria.

Hypothesis Testing

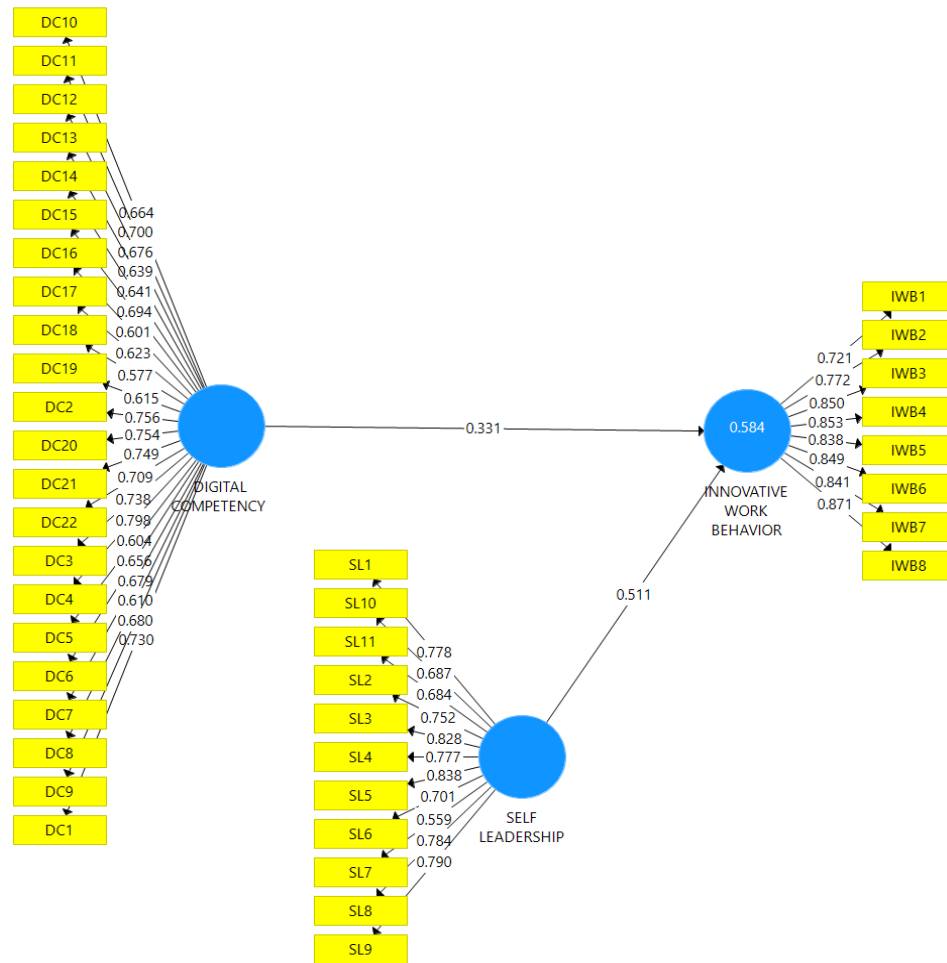


Figure 1. Hypothesis Testing of Study

Hypothesis testing is based on the bootstrapping test. Then to find out whether the hypothesis is rejected or not, it is necessary to look at the path coefficient results; the following are the results of hypothesis testing:

Table 9. Hypothesis Testing

	Standard Deviation (STDEV)	t Statistics (O/STDEV)	Path Coefficients	p Values	Hypothesis
DC → IWB	.071	4.655	.331	.000	Accepted
SL → IWB	.072	7.108	.511	.000	Accepted

Table 9 shows that the research model produces positive t-statistics and t-Table = df (n-k = 108-4 = 106) of 1.983. It can be concluded that the greater the value of an exogenous variable on an endogenous variable, the stronger the effect. The direct influence of digital competency on innovative behavior is shown through the path coefficient of 0.331 with a p-value of 0.331 < 0.05. This result means that digital competency has a significant effect on innovative behavior.

The direct influence of self-leadership on innovative behavior is shown through the path coefficient of 0.511 with a p-value of $0.511 < 0.05$. This result means that self-leadership has a significant effect on innovative behavior. Self-leadership is considered the direct impact of the largest endogenous variable (7,108), then digital competency (4,655). The level of significance used in this study is 5%. Therefore, the criterion is that the p-value must be < 0.05 .

Discussion

The findings of this study indicate that digital competency has a positive and significant impact on innovative work behavior. This finding supports the role of the teacher in facing challenges in the community's social life, where people currently believe that science and technology play a role in building a knowledge-based society. The process of innovative development in the teacher must be addressed, considering that students reflect the attitudes and behavior of the community (Suharsaputra, 2016).

The process of teaching in the current era involves learning capacity, creativity, problem-solving, collaboration, and schools that can survive change and are committed to building sustainable development (Hargreaves, 2003). The substance and methods of education and teaching must continue to use the old model, considering that the teacher reflects the future. This model requires improving the role and duties of teachers innovatively. Teachers must prepare what is relevant in education today to the social future in the presence of technology with innovation (Kolenick, 2018).

This finding supports previous research mentioning the importance of teachers mentioned in the study by Sukadana and Mahyuni (2021), who found that digital competency is directly related to innovative work behaviors. This importance shows that schools that support the development of digital teacher competencies will increase the innovative behavior of teachers, which will help the teaching process more optimally according to the needs of the times. Digital competency combined with teacher innovativeness will make learning more effective and personalized according to student needs (Redecker & Punie, 2017). The findings of this study are supported by a previous study by Santoso et al. (2019) that digital competency could support innovative work behavior to achieve better performance at the individual level.

Teachers need to emphasize the aspect of self-leadership to build schools and present innovation to education (Suharsaputra, 2016). According to Kusdinar and Haholongan (2019), inspiring work as a calling oneself fosters good self-leadership. This work is done by changing, motivating, and controlling oneself to be positive so that the workload will not be perceived as an obstacle to working. Social support from co-workers, superiors, subordinates, or others can be created to increase innovative behavior. In the context of a teacher, the interpretation can be formed: a teacher with good self-leadership in himself will trigger innovative work behavior because it is supported by himself and the surrounding environment.

Previous studies have shown that self-leadership significantly impacts innovative work behavior. The more self-leadership an individual has, the more innovative their work behavior becomes (Kusdinar & Haholongan, 2019; Qaiser et al., 2020). Promoting self-leadership is crucial in motivating employees as it leads to increased self-development, which results in greater involvement in work and continued innovation (Qaiser et al., 2020). To attain the highest level of innovation, teachers must adopt a professional attitude toward their work. They should engage in experimentation, reflect on their forms of innovativeness, collaborate with school leaders and colleagues, and exchange ideas (English, 2006). Furthermore, this study shows that self-leadership positively and significantly impacts innovative work behavior. This finding is also supported by a previous study that has the same result by Kor (2016), Kim and Zhou (2018), Omar and Mahmud (2014), and Widyani et al. (2017).

Conclusion

In conclusion, this study focuses on essential ideas related to digital competency, innovative work behavior, and self-leadership. The results show that digital competency has a positive impact on innovative work behavior and self-leadership, which, in turn, has a positive impact on innovative work behavior. Innovative work behavior involves the whole work process in the context of this research in school. Innovation is a product of human activity, which can be achieved only by systematic and continuous efforts (Gkontelos et al., 2022). This information supports the previous discussion that to foster innovative work behavior, teachers must build and improve their digital competency and self-leadership.

Recommendations

The findings of this study are not only of concern to teachers but also to schools as a forum for teacher development. The study provides some practical insights. Based on the findings, the authors emphasize that international Islamic schools should improve the innovative work behavior of their teachers and the teachers themselves through training, self-development programs, building knowledge exchange between teachers and school leaders, and being open to ideas and then coming up with ideas to develop a sustainable educational program for the school.

The theoretical impact of this study is the development of digital competency theory, self-leadership, and innovative work behavior. The results of this study indicate the potential for research development for other researchers and

scientific sources with the same variables. In future research, it is recommended to include additional variables and methodologies and expand the study to other schools, such as public schools, for a more comprehensive understanding of the research topics.

Limitations

This study has several limitations. First, it is limited to digital competency, self-leadership, and innovative work behavior and does not consider other factors, such as motivation or self-efficacy. Second, it covers only the education field and is limited to one foundation, which excludes other schools in the same industry owing to various constraints. In addition, a cross-sectional approach was used, meaning that data were collected simultaneously during the study period, which did not allow for causal relationships between research variables.

Ethics Statements

The studies involving human participants were reviewed and approved by objects. The participants provided their written answers to participate in this study.

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Authorship Contribution Statement

Sary: Research conceptualization, theoretical framework, formal analysis, funding acquisition. Dudija: Supervising all activities, supporting expert validity, methodology. Moslem: Methodology, data curation, project administration, original draft, writing review, and editing.

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Appendix

Digital Competency (Source: Machmud et al., 2021)

DC1	I understand the Ministry of Education and Culture regulations regarding classroom learning standards
DC2	I understand how to implement learning standards in the classroom according to the regulations of the Ministry of Education and Culture
DC3	I adjust learning using ICT according to the learning standards of the Ministry of Education and Culture
DC4	I am actively discussing the use of ICT for the learning process
DC5	I know the barriers to using ICT for the learning process
DC6	I try to analyze the effectiveness of the application of ICT in the learning process
DC7	I understand that some applications will make the learning process easier for students
DC8	I have in-depth knowledge of the subjects I teach
DC9	I am able to visualize the material I teach with the help of ICT (Example: Through video or pictures)
DC10	I encourage students to interact with the community to solve existing problems
DC11	I give the right portion for students to use ICT in learning
DC12	I give assignments to students with a focus on problem solving
DC13	I give group assignments to students with their own innovation focus (Example: Tool-making practice in science)
DC14	I use digital communication media to communicate with students (Example: Whatsapp or E-Mail)
DC15	I use the media on the Internet to find out the progress of the subjects I teach
DC16	I use software to evaluate student learning outcomes (Example: Spreadsheets/excel)
DC17	I use the facilities provided by the school in the learning process (such as internet, computer laboratory, LCD projector, etc.)
DC18	I use the app to share material with students (Example: Onedrive or Google drive)
DC19	I take part in virtual workshops/trainings/conferences as an effort to develop myself as a teacher
DC20	I read a lot on the internet about the subjects I teach then use the material for more situation-relevant information
DC21	I encourage students to study independently then guide them with discussion and question and answer sessions
DC22	I discuss a lot with the school regarding the importance of using ICT in learning

Self-Leadership (Source: Siambi, 2021)

SL1	I set specific goals for my own performance
SL2	I work towards achieving certain goals that I have set for myself
SL3	I realize how well I do when I do an activity
SL4	I visualize myself successfully doing a task before I do it
SL5	Sometimes I imagine in my mind a successful performance before I actually do the task
SL6	I devised a plan to reward myself when successfully completing a target
SL7	When I do something well, I reward myself with a special occasion like a good dinner, watching a movie, shopping, etc.
SL8	I try to mentally evaluate the accuracy of my own beliefs about the situation I'm in trouble with
SL9	I think about my own beliefs and assumptions whenever I encounter a difficult situation
SL10	Sometimes I talk to myself (out loud or in my head) to reflect on what I've done
SL11	Sometimes I find that I am talking to myself (aloud or in my head) to help me deal with difficult problems that I am facing.

Innovative Work Behavior (Source: Sari and Najmudin, 2021)

IWB1	I always care about the problems that occur around my work environment
IWB2	I try to improve my knowledge so that I can solve problems around my work environment
IWB3	I often learn how to find new learning methods that can be applied to students
IWB4	I'm always looking for new ways to get my work done more effectively
IWB5	I invite my colleagues to try a more innovative way of learning
IWB6	I introduce innovative ideas in learning to my coworkers
IWB7	I contribute to the development of innovative learning in schools
IWB8	I try to develop the innovative learning that I find
