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The Influence of Knowledge, Motivation, and Support and Facilities on the Interest of Teachers of SMP Negeri 8 Jayapura in Publishing Publications: A Quantitative Approach to Identifying Constraints and Solutions

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Abstract

This study aims to identify the factors that affect the interest of SMP Negeri 8 Jayapura teachers in publishing scientific publications, analyze the obstacles faced, and offer solutions based on quantitative approaches. All population members were used as respondents in this saturated sample study, which involved 75 instructors at SMP Negeri 8 Jayapura. A 5-point Likert scale was used in the questionnaire used to collect the data. Evaluation of the measurement model, structural model, and hypothesis testing were all part of the data analysis process utilizing Smart PLS 4. The study identified three main variables that influenced teachers' scientific publications, namely knowledge of scientific writing techniques (X1), writing Motivation (X2), and access to facilities and support (X3). All three significantly affected scientific publications (Y), with the most significant contribution from knowledge (loading 0.922). Cronbach's Alpha scores of 0.783–0.827 and Composite Reliability > 0.827 indicated encouraging validity and reliability testing findings. Hypothesis testing showed that X1, X2, and X3 had a significant positive effect on Y, confirming the importance of increasing knowledge, Motivation, and support to improve teachers' scientific publications.

Keywords

Knowledge; Motivation; Professional Development; Scientific Publications; Support and Facilities; Teacher

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1. INTRODUCTION

To improve the quality of education, teachers are strategically important and must be qualified. No matter how good the educational facilities and infrastructure are, they will only be in vain with the support of qualified teachers. Teachers are professional educators whose primary responsibility is to instruct, guide, direct, train, assess, and evaluate pupils, as stated in Law Number 14 of 2005, covering teachers and lecturers (Kuswanto, 2024). Law 20 of 2003 regarding the National Education System, Law 14 of 2005 regarding educators and professors, and Government Regulation 19 of 2005 concerning National Education Standards all state that teachers must grow their profession sustainably due to their highly strategic role. The interest of educators in publishing scholarly works is crucial for enhancing their expertise. This study aims to look at the factors that affect this interest, list the problems encountered, and suggest ways to improve scholarly publications at SMP Negeri 8 Jayapura.

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One crucial requirement for a professional teacher is the ability to produce publications. Through publication, a teacher can develop himself and, at the same time, become a form of contributing to improving the quality of the learning process in schools and the development of the world of education in general (Kyriacou, 2018); (Biggs et al., 2022). Meanwhile, according to (Garzón Artacho et al., 2020), teachers are one of the essential components in a change, so it is important to improve teacher competence through research to create learning development and develop the quality of human resources.

Such as a scientific publication, is influenced by three main factors: attitudes toward behavior, subjective norms, and perceptions of control over behavior. These factors show that knowledge, motivation, support, and facilities are important determinants in shaping a teacher's interest in engaging in scientific publication activities (Ajzen, 1991); (Ajzen & Schmidt, 2020). A teacher's knowledge can influence his perception of control over his ability to produce publications (Ajzen, 1991); (Ajzen & Schmidt, 2020), while subjective norms are related to the support of his social and professional environment.

In addition, Self Determination Theory underlines the importance of intrinsic motivation, such as the drive to learn and contribute, and extrinsic motivation derived from recognition, incentives, and support of available facilities (Deci & Ryan, 2013). Furthermore, Expectancy Theory highlights that teachers will be motivated to participate in scientific publications if they believe that their efforts will yield valuable results, such as professional development or recognition in the field of education (Cooper & Payne, 1981); (Maslow, 2019). Not only that, Social Cognitive Theory is also relevant in explaining how the interaction between personal factors (knowledge and motivation), environmental factors (support and facilities), and previous experience can shape teachers' intentions and behaviors in publishing publications (Bandura, 1986); (Bandura, 2023).

Scientific works (publications) are reports or writings that study problems by fulfilling scientific rules and ethics (Gastel & Day, 2022). A scientific work is an essay that contains science and scientific truths, presents facts, and is arranged systematically according to the writing method using a scientific variety of language (Cargill & O'Connor, 2021). According to (Rahyasih et al., 2020), scientific publications include (1) presentations at scientific forums, (2) The scientific publication of research results, and (3) the publication of lesson textbooks, enrichment books, and/or teacher manuals, including lesson books, lesson modules/diktats, translation works, and teacher manuals. Writing scientific papers can improve teacher competence, especially pedagogical competence and professional competence (Uerz et al., 2018).

Writing scientific papers inevitably requires teachers to read extensively, listen to various information related to the topic, and effectively communicate their thoughts. Engaging in this activity intensively can sustainably improve teacher competence, increasing teachers' professionalism (M. McMahon et al., 2015); (Bürgener & Barth, 2018). The field reality reveals that efforts to develop the profession through scientific writing activities face obstacles. Discussions with teachers at SMP Negeri 8 Jayapura City reveal that the low competence of scientific publications poses a serious problem for them.

Although many studies have highlighted the importance of scientific publications for teachers to improve professional competence and contribute to the development of the world of education (Hayuhantika, 2017), most of these studies focus more on the benefits of scientific publications in general for teachers. However, only a few studies discuss teachers' obstacles in producing publications, especially in certain areas, such as SMP Negeri 8 Jayapura.

Various contexts have yielded research on teachers' interest in academic publication, but several gaps remain. Previous studies have primarily focused on training and mentoring aspects of academic writing. For example (Salehudin, 2022), provided workshops for elementary school teachers to enhance their writing and publication skills. Although this study successfully improved teachers' technical

abilities in writing and submitting articles to national journals, it did not specifically analyze the factors influencing teachers' interest in publication through a quantitative approach. Similarly, (Rahayu & Suryono, 2023) Examined family planning counselors (PKB) found that a lack of knowledge and writing skills was a major barrier to academic publication. However, since this study did not focus on teachers, its relevance to understanding middle school teachers' interest in academic publication remains limited.

In addition, several studies have explored motivational factors in academic writing. For instance, (Abdul Rahman et al., 2023) Identified low motivation among Islamic education (PAI) teachers due to a lack of information, high publication costs, and insufficient mentoring and references. While this study highlighted internal and external factors affecting motivation, it was limited to Islamic education teachers. It did not examine the role of institutional support and facilities on a broader scale. Another study by (Tanjung, 2024) Focused more on teachers' involvement in classroom action research than in the journal publication context. Meanwhile, (Wahyudin et al., 2023) Explored using artificial intelligence (AI) to enhance vocational school teachers' writing skills. However, this study emphasized the role of technology rather than the social and structural factors influencing teachers' interest in publication.

Considering these research gaps, the present study offers significant distinctions from previous research. This study specifically focuses on middle school teachers, distinguishing it from previous studies that primarily examined elementary school teachers, vocational school teachers, and even non-teaching professionals, such as family planning counselors. Additionally, this study employs a quantitative approach by analyzing the influence of knowledge, motivation, institutional support, and facilities on teachers' interest in academic publications. This study examines the influence of knowledge, motivation, institutional support, and facilities on teachers' interest in academic publications. Unlike previous studies, which were mostly

Many teachers, particularly those at SMP Negeri 8 Jayapura, encounter numerous challenges when it comes to the writing and publication of scientific papers (Kuswanto, 2024). The absence of scientific writing expertise and abilities is one of the primary impediments. The absence of sufficient support and facilities is are additional impediment. Additionally, inadequate motivation frequently serves as an obstruction (Bürgener & Barth, 2018).

This study attempts to fill the gap by identifying the obstacles faced by teachers at SMP Negeri 8 Jayapura in producing scientific publications, as explained in the following research framework image:

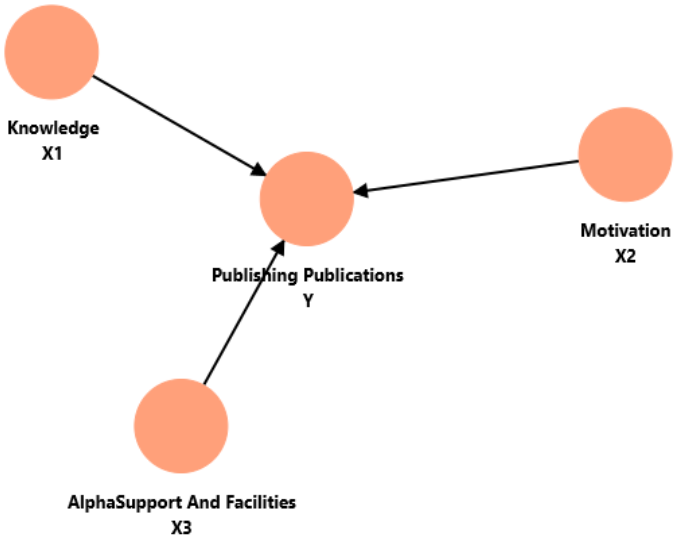

Figure 1. Research Framework

Hypothesis (H1): "There is a significant relationship between the level of teacher knowledge regarding scientific writing techniques and scientific publications produced by teachers at SMP Negeri 8

Jayapura."

Hypothesis (H2): "There is a significant relationship between teacher motivation to write and publish scientific works at SMP Negeri 8 Jayapura."

Hypothesis (H3): "There is a significant relationship between teacher access to support and facilities (internet access, scientific journals, training) of scientific publications produced by teachers at SMP Negeri 8 Jayapura."

Hypothesis (H4): "There is a significant relationship between knowledge, motivation and support, and facilities for scientific publications produced by teachers at SMP Negeri 8 Jayapura."

2. METHODS

All of the study's participants were instructors at SMP Negeri 8 Jayapura. 75 teachers made up the study's sample (Almarzouqi, 2022). Saturated sampling, a sampling strategy in which all individuals of the population who match the study criteria are included as respondents, was used to pick the sample. Saturated sampling was chosen because the number of teachers at SMP Negeri 8 Jayapura is relatively limited, so the entire population can be used as a sample (Pranata, 2024).

Data Collection

Direct distribution of questionnaires was used to obtain data from all teachers at SMP Negeri 8 Jayapura. Respondents were asked to fill out the questionnaire by answering each question based on their experience and perception regarding writing and publishing scientific papers (Pranata, 2022). The collected questionnaires were then analyzed to see the relationship between the variables studied.

Each construct was measured using a 5- 5-point Likert scale (Sungguh Ponten Pranata et al., 2021), from very not agree to agree strongly.

The Likert scale was selected because it can accurately and quantitatively quantify perceptions.

a. The weight of Strong Disagree (STS) is 1.

b. TS, or disagree, weights 2.

c. KS, or disagree, weights 3.

d. With a weight of four, agree (S).

e. SS, or strongly agree, weights 5.

Data Analysis

The collected data will be analyzed using Smart PLS 4. The analysis steps carried out include:

a. Assessment of Measurement Models

b. Assessment of Structural Models

Hypothesis Testing

3. FINDINGS AND DISCUSSIONS

This study identified several important variables, such as knowledge of scientific writing techniques, motivation to write, and access to facilities and support, which are anticipated to significantly influence the scientific publications produced by teachers.

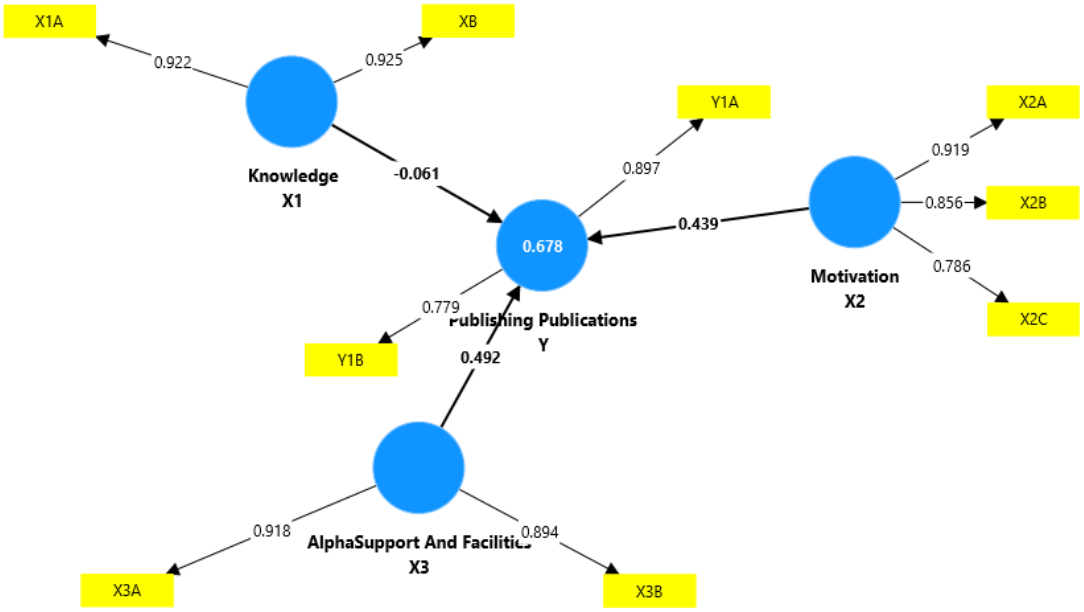

Figure 2. PLS-SEM Algorithm

Figure 2 demonstrates that all indicators included in this model exhibit substantial outer loading, signifying their reliability in measuring each construct within this study (Abbad, 2021). These indicators elucidate the elements that affect teacher scientific publications and establish a robust foundation for future investigation of the interrelations among variables in the research model (Kuswanto, 2024). For more details, see Table 1.

Table 1. Outer loadings

	AlphaSupport And Facilities_X3	Knowledge_X1	Motivation_X2	Publishing Publications_Y
X2A			0,919	
X2B			0,856	
X2C			0,786	
X3A	0,918			
X3B	0,894			
XB		0,925		
Y1A				0,897
Y1B				0,779
X1A		0,922		

Knowledge (X1): In the Knowledge variable (X1), indicator X1A has the highest outer loading of 0.922, which indicates that this indicator is very strong in describing the construct of knowledge about scientific writing techniques. This indicates that the aspects measured by indicator X1A greatly influence teachers' understanding of scientific writing techniques (Pande, 2020).

Motivation (X2): In the Motivation variable (X2), there are three indicators, namely X2A, X2B, and X2C, with outer loadings of 0.919, 0.856, and 0.786, respectively. These indicators show high values, with X2A having the highest loading at 0.919 (Rafique, 2020). These values indicate that teachers' Motivation to write and publish scientific publications is significantly influenced by these three indicators, with X2A making the largest contribution.

Support and Facilities (X3): In the Access to Facilities and Support variable (X3), there are two indicators, namely X3A and X3B, with outer loading values of 0.918 and 0.894, respectively. Both indicators show a strong relationship with the construct of access to facilities, with X3A showing a slightly higher value (Wei, 2015). This illustrates that internet access and training facilities greatly influence teachers' ability to produce scientific publications.

Publishing Publications (Y): The Scientific Publication variable (Y) is measured by two indicators, namely Y1A and Y1B, with outer loadings of 0.897 and 0.779, respectively (Kuswanto, 2024). These values indicate that, although these two indicators greatly influence scientific publications produced by teachers at SMP Negeri 8 Jayapura Y1B, which has a slightly lower value than Y1A, it still shows a significant contribution.

Measurement Model

The construct reliability and validity evaluation results show that all constructs in this study have adequate reliability and validity, with most constructs showing very good values.

Table 2. Construct reliability and validity

	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
AlphaSupport And Facilities_X3	0,783	0,791	0,902	0,821
Knowledge_X1	0,827	0,827	0,920	0,852
Motivation_X2	0,815	0,813	0,891	0,732
Publishing Publications_Y	0,793	0,740	0,827	0,706

Table 2 shows the results of the construct reliability and validity evaluation for each construct in this study, which includes Support and Facilities (X3), Knowledge (X1), Motivation (X2), and Publishing Publications (Y). This evaluation aims to ensure that the indicators used in this study are reliable and valid in measuring the intended variables.

The Support and Facilities (X3) construct has very good results, with a Cronbach's Alpha of 0.783 indicating good internal consistency. The Composite Reliability (rho_a) value of 0.791 and the high Composite Reliability (rho_c) of 0.902 indicate very good reliability (Zhang, 2014). In addition, the Average Variance Extracted (AVE) value of 0.821 indicates that this construct has very good convergent validity, with more than 80% of the indicator variance being explained by this construct.

The Knowledge construct (X1) also showed adequate results with a Cronbach's Alpha of 0.827, which means that this construct has very good internal consistency. The Composite Reliability (rho_a) and Composite Reliability (rho_c) values of 0.827 and 0.920 respectively indicate very high reliability. Convergent validity is also very good, with an AVE of 0.852, which indicates that more than 85% of the variance of the indicators of this construct can be explained by the construct (Ozdemir, 2018). The Motivation construct (X2) has a Cronbach's Alpha of 0.815, which indicates good reliability. The Composite Reliability (rho_a) values of 0.813 and Composite Reliability (rho_c) of 0.891 also indicate high reliability. With an AVE of 0.732, this construct has good convergent validity because this construct can explain more than 73% of the indicator variance.

Meanwhile, the Publishing Publications (Y) construct differs little from others. Although Cronbach's Alpha of 0.793 still meets the good reliability limit, this value is slightly lower than other constructs. However, the Composite Reliability (rho_a) value of 0.740 and Composite Reliability (rho_c) of 0.827 indicate good reliability. The AVE of 0.706 indicates good convergent validity, although slightly lower than other constructs.

Structural Model

Table 3 presents the results of the Heterotrait-Monotrait Ratio (HTMT) test used to evaluate the discriminant validity in this research model. HTMT measures the extent to which two constructs in this model can be distinguished from each other (Hair, 2022). An HTMT value lower than 0.85 indicates that the constructs can be distinguished well, while a value higher than 0.85 may indicate problems with discriminant validity.

Table 3. (HTMT)

Knowledge_X1 <-> AlphaSupport and Facilities_X3	0,405
Motivation_X2 <-> AlphaSupport and Facilities_X3	0,836
Motivation_X2 <-> Knowledge_X1	0,773
Publishing Publications_Y <-> AlphaSupport and Facilities_X3	0,746
Publishing Publications_Y <-> Knowledge_X1	0,547
Publishing Publications_Y <-> Motivation_X2	0,072

The results presented in the table show that the HTMT value between Knowledge (X1) and Access to Facilities and Support (X3) is 0.405, suggesting a clear distinction between these two constructs. This value is considerably lower than the threshold of 0.85, suggesting a lack of significant overlap between the two. Similarly, the correlation between Motivation (X2) and Access to Facilities and Support (X3) presents an HTMT value of 0.836. This relatively high value remains beneath the established threshold of 0.85. This suggests a robust connection between the two constructs while allowing for differentiation. The HTMT value of 0.773 for the constructs Motivation (X2) and Knowledge (X1) suggests a significant relationship between them. Nonetheless, this value remains under 0.85, indicating that both can be effectively differentiated despite a notable relationship between the two. The HTMT value between Scientific Publication (Y) and Access to Facilities and Support (X3) is 0.746, suggesting a clear distinction between these constructs. The correlation between the two exhibits a moderate degree of strength (Sukendro, 2020).

In the interim, the constructs Scientific Publication (Y) and Knowledge (X1) exhibit an HTMT value of 0.547, suggesting a moderate relationship that remains distinctly identifiable. The low HTMT value of 0.072 between Scientific Publication (Y) and Motivation (X2) highlights a clear distinction between these constructs, suggesting a lack of significant overlap.

The findings from the HTMT test indicate that all constructs in this study are distinguishable, as most HTMT values are significantly below the 0.85 threshold. The Motivation construct (X2) demonstrates a more robust relationship between Access to Facilities and Support (X3) and Knowledge (X1) while still adhering to the acceptable thresholds for good discriminant validity. The Scientific Publication (Y) framework, particularly concerning Motivation (X2), reveals distinct variations that enhance the discriminant validity within this research model.

Hypothesis Testing

Figure 3 illustrates the relationship between variables in this study. This diagram illustrates how variables such as Knowledge (X1), Motivation (X2), and Access to Facilities and Support (X3) affect Scientific Publications (Y) produced by teachers.

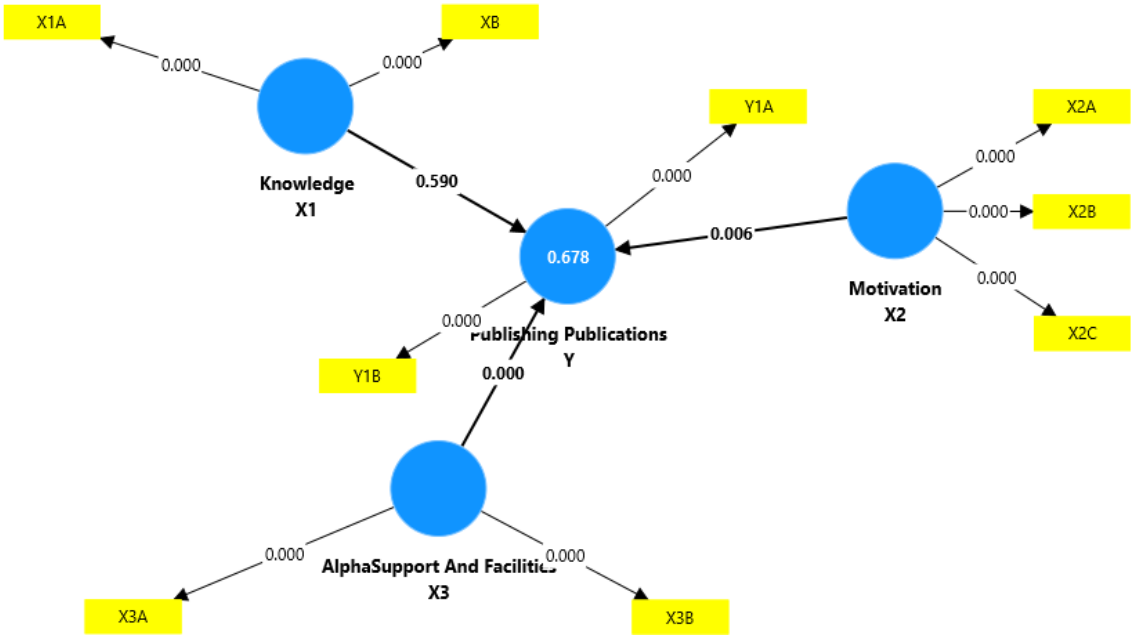

Figure 3. PLS Bootstrapping

The results of the analysis show that the three factors - Access to Facilities and Support, Knowledge, and Motivation have a significant influence on teachers' ability to produce scientific publications (Mailizar, 2021). Knowledge of scientific writing techniques and Access to Facilities and Support have a greater influence, while Motivation also has a significant role, although its influence is slightly smaller (Toropova et al., 2021). These relationships are statistically significant, with a very low p-value, indicating that these findings are credible and contribute to developing scientific publications among teachers. To clarify, it can be seen in table 4,

Table 4. Path coefficients

	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T statistics (|O/STDEV|)	P values
AlphaSupport And Facilities_X3 -> Publishing Publications_Y	0,492	0,480	0,138	3,567	0,000
Knowledge_X1 -> Publishing Publications_Y	0,615	0,655	0,114	0,538	0,004
Motivation_X2 -> Publishing Publications_Y	0,439	0,457	0,161	2,728	0,006

The Path Coefficients table presents the findings from the analysis regarding the relationships among the variables in this research model, specifically assessing the impact of each independent variable on Scientific Publication (Y). The analysis indicates that Access to Facilities and Support (X3), Knowledge (X1), and Motivation (X2) significantly and positively influence Scientific Publication.

The relationship between Access to Facilities and Support (X3) and Scientific Publication (Y) presents an original sample value (O) of 0.492, suggesting a moderate positive influence. The correlation between teachers' access to facilities and support—such as training and scientific journals—and their propensity to produce scientific publications is significant. Improved access enhances the likelihood of generating scholarly work. The outcome is reinforced by a t-statistics value of 3.567, suggesting that this relationship holds statistical significance. The extremely low p-value (0.000) indicates a significant impact of Access to Facilities and Support on Scientific Publication.

Second, the relationship between Knowledge (X1) about scientific writing techniques and Scientific Publication (Y) has an original sample value (O) of 0.615, which indicates a fairly strong positive influence. This means that the higher the teacher's knowledge of scientific writing, the more likely they are to produce publications (Gopal, 2021). The very high t-statistics value, which is 5.389, indicates that this relationship is very significant, and the p-value of 0.004 strengthens this finding by indicating that the influence of Knowledge on Scientific Publication is also significant, although slightly smaller than Access to Facilities and Support. Finally, the relationship between Motivation (X2) and Scientific Publication (Y) has an original sample value (O) of 0.439, indicating a moderate positive influence. Although the influence is slightly smaller than Knowledge and Access to Facilities and Support, this result is still statistically significant with a t-statistics value of 2.728 and a low p-value (0.006). This shows that teacher motivation to write and publish scientific publications also plays an important role in increasing the number of publications produced.

Discussion

All hypotheses in this study are proven to have a significant relationship based on the reliability, validity, and hypothesis testing analysis results. Knowledge of scientific writing techniques, Motivation to write, and access to supporting facilities such as training and scientific journals significantly affect the number of scientific publications produced by teachers at SMP Negeri 8 Jayapura.

Hypothesis (H1): "There is a significant relationship between the level of teacher knowledge regarding scientific writing techniques and scientific publications produced by teachers at SMP Negeri 8 Jayapura."

The reliability analysis and hypothesis testing results indicate a significant relationship between the level of teacher knowledge regarding scientific writing techniques and scientific publications produced by teachers at SMP Negeri 8 Jayapura. Knowledge_X1 (Knowledge) shows a Cronbach's alpha value of 0.827, which reflects good internal reliability, while Composite Reliability (rho_a = 0.827; rho_c = 0.920) shows very good reliability. In addition, the Average Variance Extracted (AVE) value of 0.852 indicates that more than 85% of the indicator variance in this construct can be explained by the knowledge construct, which indicates very good validity (Paais, 2020). The hypothesis test results, which measure the relationship between Knowledge_X1 and Publishing Publications_Y (scientific publications), produced an original sample (O) of 0.615 with a t-statistic of 5.389 and a p-value of 0.004, which is very significant.

This shows that the higher the teacher's knowledge of scientific writing techniques, the more likely they are to produce quality scientific publications. This study is in line with the findings of Kyriacou (2018), who emphasized that developing scientific writing knowledge and skills can directly improve the quality of teacher publications (Kyriacou, 2018). The same thing was also emphasized by McMahon et al. (2015), who found that increasing pedagogical competence through research and scientific writing can improve the quality of teaching and encourage professional development among teachers (G. McMahon, 2005). Thus, the results of this study indicate that developing teachers' knowledge of scientific writing techniques is a key factor that encourages them to participate more actively in scientific publications, which in turn can improve the quality of education in schools.

Hypothesis (H2): "There is a significant relationship between teacher motivation to write and publish scientific papers at SMP Negeri 8 Jayapura."

The reliability analysis and hypothesis testing results indicate a significant relationship between teacher motivation to write and publish scientific papers and scientific publications produced by teachers at SMP Negeri 8 Jayapura. Motivation_X2 (Motivation) shows a Cronbach's alpha value of 0.815 and Composite Reliability (rho_a = 0.813), which indicates good reliability (Talukder, 2020). The Average Variance Extracted (AVE) value of 0.732 indicates adequate convergent validity, where the motivation construct can explain more than 73% of the indicator variance in this construct. The

hypothesis test results show a relationship between Motivation_X2 and Publishing Publications_Y with the original sample (O) of 0.439 and t-statistics of 2.728, which is statistically significant (p-value = 0.006). This shows that the higher the teachers' motivation to write and publish scientific papers, the more likely they are to produce quality scientific publications.

This finding aligns with research conducted by Bürgener & Barth (2018), which states that teachers' intrinsic Motivation in scientific writing plays an important role in increasing the frequency and quality of their scientific publications (Bürgener & Barth, 2018). Strong Motivation to participate in academic activities can encourage teachers to face challenges in scientific writing, even though there are often obstacles related to limited time and resources. Another study by McMahon et al. (2015) also showed that high Motivation is related to the quality of scientific papers and improves teachers' overall professional competence. Therefore, developing teachers' Motivation to write and publish scientific papers can be a key factor in increasing the number of scientific publications produced and, in turn, improving the quality of education in schools (G. McMahon, 2005).

Hypothesis (H3): "There is a significant relationship between teacher access to support and facilities (internet access, scientific journals, training) and scientific publications produced by teachers at SMP Negeri 8 Jayapura."

The reliability analysis and hypothesis testing results indicate a significant relationship between teacher access to support and facilities and scientific publications produced by teachers at SMP Negeri 8 Jayapura. Support and Facilities_X3 (Access to Facilities and Support) shows a Cronbach's alpha of 0.783 and Composite Reliability (rho_a = 0.791), which indicates good reliability. The Average Variance Extracted (AVE) value of 0.821 indicates very good validity, where the facility access construct can explain more than 80% of the indicator variance in this construct (Alam, 2020). The hypothesis test results show a significant relationship between Support and Facilities_X3 and Publishing Publications_Y with the original sample (O) of 0.492 and t-statistics of 3.567, which is highly statistically significant (p-value = 0.000). This indicates that the better teachers access supporting facilities such as training, internet access, and scientific journals, the higher their chances of producing scientific publications.

This finding is in line with research conducted by Garzón Artacho et al. (2020), which states that access to supporting facilities, such as the Internet and academic training, is very important in facilitating teachers to engage in scientific writing and publication (Garzón Artacho et al., 2020). In this context, adequate infrastructure and facility support can reduce the obstacles teachers face, both in terms of technical and time, so that they can focus more on improving their competence and the quality of scientific publications. Research by Uerz et al. (2018) also shows that access to adequate resources improves teachers' ability to produce quality scientific work, contributing to their professional development (Uerz et al., 2018). Therefore, providing better access to facilities can play a key role in encouraging teachers to be more active in research and scientific publication, which ultimately positively impacts the quality of education.

Hypothesis (H4): "There is a significant relationship between knowledge, motivation, and support and scientific publication facilities produced by teachers at SMP Negeri 8 Jayapura."

The results of the reliability and validity analysis show that Knowledge (X1), Motivation (X2), and Support and Facilities (X3) all have adequate reliability and validity, with good Cronbach's alpha, Composite Reliability, and Average Variance Extracted (AVE) values (Mulder, 2021). The results of the hypothesis test presented in Table 4 show that these three variables, knowledge, Motivation, and access to facilities, have a significant relationship with Publishing Publications_Y (scientific publications). Specifically, knowledge and access to facilities have a greater influence on the number of scientific publications produced, while Motivation also has a significant influence, although slightly smaller. Conclusion for H4: Based on the results of the hypothesis test analysis, it can be concluded that the three factors, knowledge, Motivation, and access to facilities, have a significant influence on scientific

publications produced by teachers at SMP Negeri 8 Jayapura.

This study is in line with the findings described by Biggs et al. (2022), which emphasizes that the combination of professional knowledge, personal Motivation, and facility support can improve the quality and quantity of scientific publications among educators (Biggs et al., 2022). In addition, research by Kyriacou (2018) and McMahon et al. (2015) also confirmed that increasing teacher knowledge of scientific writing techniques, high Motivation to participate in scientific activities, and adequate facility support, such as access to training and other resources, can significantly encourage teachers to produce scientific publications (Goldan, 2020). Therefore, developing these three factors can be a strategic step in increasing teachers' contribution to education through quality scientific publications.

4. CONCLUSION

This study indicates that enhancing the quality of education via scientific publications necessitates that schools and educational institutions foster the development of knowledge, motivation, and appropriate facilities for teachers. This study examined the significant relationship among three primary factors: knowledge of scientific writing techniques, motivation to write, and access to supporting facilities, which influence teachers' capacity to produce scientific publications at SMP Negeri 8 Jayapura. The analysis revealed that these three factors significantly impacted both the quantity and quality of scientific publications generated by teachers. The influence of scientific writing techniques and access to supporting facilities, including training, the Internet, and scientific journals, was notably significant. The motivation to write also had a significant impact, albeit with a somewhat lesser degree of influence.

The findings from the hypothesis test indicated a significantly low p-value for each factor, reinforcing the notion that the enhancement of knowledge, the elevation of motivation, and the provision of sufficient access to supporting facilities are crucial in promoting teachers' scientific publications. The understanding of scientific writing emerged as the primary element that motivated teachers to engage more actively in academic writing endeavors. Simultaneously, sufficient facility support may mitigate the challenges encountered by educators in generating high-quality scientific output. The role of intrinsic motivation in enhancing the success of teachers' scientific publications has been demonstrated to be significant.

This study emphasizes that enhancing scientific writing competencies, motivation, and access to supporting facilities are critical factors in boosting teacher participation in scientific publications. Consequently, implementing strategic measures to enhance these three elements within the educational setting can elevate the overall quality of education, with notable input from educators in advancing knowledge and academic inquiry.

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