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**Self-leadership and Teacher's Innovative Work
Behavior: The Mediating Roles of Self-efficacy and
Optimism**

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Abstract

This study aims to identify the relationship between self-leadership and innovative behavior in the workplace with self-efficacy and optimism as mediating variables. This study used a convenience sampling method involving 121 Mathematics Teachers in Kebumen District with 121 teachers as respondents. Data were analyzed using quantitatively using the Structural Equation Model (SEM) based on Partial Least Square (PLS). The results showed that self-leadership, optimism, and self-efficacy affected innovative behavior, while self-leadership affected optimism and self-efficacy. Besides, optimism and self-efficacy could mediate the relationship between self-leadership and innovative behavior.

Keywords: Self-leadership, Self-efficacy, Optimism, innovative behavior

Introduction

Innovation in education still becomes an interesting research topic. Conventional teaching techniques and methods are less effective in improving gifted teachers' constructive role in a rapidly changing and uncertain modern society (Chaminade & Lundvall, 2019). Concerning innovation in educational institutions, many researchers have encouraged education agencies to train new leadership talents that encourage employees to uphold their organizations and exceed performance expectations (Al-Husseini, 2015). The 4.0 era has forced educational institutions to transform conventional classrooms into digital classrooms and achieve

learning goals focused on innovation and leadership (Göker & Göker, 2020).

Scientific studies concerning Innovative Work Behavior (IWB) have been carried out mainly in non-profit organizations such as the business, service, engineering, and technological fields (Zainal & Matore, 2019). Meanwhile, referring to (Thurlings et al., 2015), studies on innovative work behavior in educational institutions are limited. The stability of educational institutions is due to the role of state support which does not mean that employee innovation goes to waste. There are three main reasons for emphasizing the need for innovative teaching behavior (Gkorezis, 2018). First, today's society is changing rapidly as the higher number of students, more diverse students, wider fields of knowledge, new responsibilities, and social expectations require higher requirements. Thus, employees, especially teachers are expected to engage in innovative work behavior continuously in general and in teaching enabling students to acquire both academic literacy and soft skills such as creativity, critical thinking, and problem-solving (Zainal & Matore, 2019). Second, the development of technology for teaching and learning purposes causes old teaching methods outdated and not in accordance with current educational needs (Zainal & Matore, 2019). Thus, teachers are required to constantly engage in innovative work behaviors to ensure that the teaching methods used are still appropriate. Third, referring to (Zainal & Matore, 2019), teachers most often deal directly with students which means that their behavior is shared and demonstrated to students as a great example for them.

Overall, innovative teaching behavior is considered a core element of the profession, plays a vital role in the development of the education system, and builds the foundation for a knowledge society. Thus, innovative teaching behavior needs should be more considered and require educational workers to seek more insights

to introduce appropriate solutions (Messmanna et al., 2010). It can be said that studies on innovative teaching behavior are as vital for education as studies on employee behavior in other fields.

Innovative Work Behavior (IWB) is the foundation for organizations including for teachers to achieve high performance so studies on factors affecting an individual's innovative behavior are important (Bak et al., 2022). The appropriate leadership style for innovation is also important to study (Akram et al., 2018). Due to the Covid-19 pandemic, the educational sector needs a suitable leadership style. Self-leadership style has not been widely studied. Self-leadership is leadership skills by building subordinates' cognitive in the form of a behavior-focused strategy; natural reward strategy; and constructive thinking strategy. Self-leadership can be developed to improve the psychological capital of subordinates in the form of optimism and self-efficacy to allow innovative behavior in the educational setting.

Concerning innovative behavior, self-efficacy and optimism are considered key successes for profitable innovation outcomes. Indeed, previous studies have revealed that the psy cap dimension significantly affects innovation capability and behavior in an organization (Chen et al., 2021;Bak et al., 2022;Erdem, 2021). Researchers emphasize that workers with high self-efficacy tend to be more innovative, resourceful, and persistent in facing obstacles. Thus, individuals with high self-efficacy and optimism are more likely to generate and apply innovative ideas in their organizations (Abbas & Raja, 2015).

Optimism is positively related to IWB. Optimistic people tend to expect positive results from their behavior as they have positive perspectives. Thus, they are confident and positive about their future (Avey et al., 2011). Individuals with optimism tend to see obstacles as temporary and external enabling them to better overcome challenges and find opportunities even in difficult times

(Seligman, 1991). This means that optimistic individuals are more likely to achieve positive outcomes when facing difficulties. Optimistic individuals view problems as positive barriers and practice their problem-solving skills to fit that model. When optimistic employees make mistakes while implementing innovative practices, they can learn from their mistakes and further sharpen and develop their skills. Optimistic employees are more likely to be creative and apply innovative approaches to problem-solving (Li et al., 2011). Based on the description above, examining the relationship between self-leadership and innovative behavior in the workplace with self-efficacy and optimism as the mediating variables in mathematics teachers at Vocational High School in Kebumen District is important

Review of Literature

Innovative Work Behavior (IWB) in educational institutions is considered one of the supporting factors in improving the quality of education. The general idea is that teachers' motivation brings out their innovative tendencies, and develops them professionally (Hosseini & Haghighi Shirazi, 2021). Most previous studies used the IBW definition which covers a three-step process. The first step is the intention to generate ideas. The second stage is where the ideas are promoted. The third stage is where the idea is realized. This process-based definition of IWB is intended to occur while performing a work role or within a work group or organization to benefit the performance of the role, group, or organization. IWB can also be defined as an employee's self-initiative behavior in generating, creating, developing, implementing, promoting, realizing, and modifying new ideas to improve the role of performance or to gain rewards (Khar Kheng et al., 2013)., 2013). (Messmanna et al., 2010) define teachers' IWB as innovation performance with a broad repertoire of observations, elicitation and

adaptation of ideas, development of strategic actions, assessment by reflection and evaluation, adjustment of innovations, and formation of allies.

This study focuses on the self-leadership style that affects innovative behavior at schools. It tries to contribute to studies on informal leadership styles that have not been widely discussed so far. (Stewart et al., 2011) define self-leadership as a process involving the individual's capacity to influence oneself to perform or complete certain tasks concerning personalized individual goals. Self-leadership allows individuals to identify and eliminate ineffective work behaviors through self-reflection and evaluation to provide more effective work behaviors (Stewart et al., 2011). There are three strategies proposed to achieve self-leadership, namely behavioral focus, natural reward, and constructive thinking (Stewart et al., 2011). The behavioral focus strategy helps individuals in managing their behavior which incorporates processes of self-observation, self-goal setting, self-esteem, self-correcting feedback, and self-cues. Meanwhile, the natural reward strategy focuses on being positive and enjoying the task (Houghton & Neck, 2002). Then, the constructive thinking strategy relates to the individual's capacity to influence and direct oneself through certain cognitive strategies. Researchers selected one or two of the highest loading factor items for each of the eight main dimensions of self-leadership through the RSLQ factor analysis. The dimension covers visualizing successful performance, self-goal setting, self-talk, self-esteem, evaluating beliefs and assumptions, self-observation, focus on natural rewards, and self-cues. (States et al., 2002).

In terms of innovative work behavior, self-efficacy and optimism are considered key successes for profitable innovation outcomes. Indeed, previous studies have revealed that the psy cap dimension significantly affects innovation capability and behavior in organizations (Chen et al., 2021;Bak et al., 2022;Erdem, 2021).

Experts have emphasized that workers with high self-efficacy tend to be more innovative, resourceful, and persistent in facing obstacles. Therefore, individuals with high self-efficacy are more likely to generate and implement innovative ideas in their organizations (Abbas & Raja, 2015).

In the discussion on the psychological capital dimension, the self-efficacy component has the strongest relationship with innovative work behavior (Rulevy & Parahyanti, 2018). Self-efficacy is individuals' belief about their ability to mobilize their motivation, cognitive resources, and actions needed to successfully carry out a particular task in a particular context (Luthans et al., 2007). Optimistic individuals tend to maintain positive expectations about innovative outcomes. (Rego et al., 2012) revealed that optimistic individuals tend to be more creative. Optimistic leaders pursue new and creative approaches to problem-solving. Besides, optimistic people tend to take compliments and expect positive events in their lives while distancing themselves from unfavorable life events. Therefore, it is unlikely that these individuals will experience self-blame and despair when working on innovative solutions to their problems. Thus, optimism will help individuals generate and implement innovative approaches to completing their tasks.

Optimistic individuals tend to have positive strengths and expectations about outcomes. Thus, they become more creative to come up with newer results and effective solutions to improve current situations and outcomes. Optimists also pursue new outcomes and creative approaches to problem-solving (Abbas & Raja, 2015).

Research Framework

Hypothesis in this study is suggested as follows:

H1 : optimism has a positive impact on innovative work behaviour.

H2 : self efficacy has a positive impact on innovative work behaviour.

H3 : self leadership has a positive impact on optimism.

H4 : self leadership has a positive impact on innovative work behaviour.

H5 : self leadership has a positive impact on self efficacy.

H6 : optimism mediates the relationship between self leadership and innovative work behavior.

H7 : self efficacy mediates the relationship between self leadership and innovative work behavior.

Research Method

This quantitative study used primary data obtained from respondents. The population in this study was all mathematics teachers for vocational high schools in Kebumen district. The predetermined criteria for the sample were mathematics teachers who have worked for 1 year to understand perceived leadership. This study involved 121 mathematics teachers from vocational highQ District as samples. Data were collected from interviews, observations, and questionnaires, as well as literature studies from relevant scientific books, literature, journal articles, websites, and others. The research hypothesis was tested using a Structural Equation Model (SEM) based on Partial Least Square (PLS). PLS is a component or variant-based structural equation model (SEM). Structural Equation Model (SEM) is a field of statistical study to test a series of relationships that are relatively difficult to measure simultaneously. (Santoso, 2014) defines SEM as a multivariate analysis technique which is a combination of factor analysis and regression analysis (correlation) to examine the relationship between variables that exist in a model, either between indicators and their constructs or relationships between constructs.

The current study uses a self-reported questionnaire to measure each variable. All items are translated from English into Indonesian using forwarding and backward translation methods (Richard W. Brislin, 1970). Innovative work behaviour is measured using the six items of IWB instrument developed by Scott et al., (1994) which includes several stages, namely idea generating, idea promotion, and idea realization. Self-leadership measurement uses Houghton et al., (2012) Revised Self-Leadership Questionnaire (RSLQ) in (2012) which consists of nine items : visualizing successful performance, self-goal setting, self-talk, self-esteem, evaluating beliefs and assumptions, self-observation, focusing on natural rewards, and self-cue. The self-efficacy component refers to the Fred Luthans, (2015) self-efficacy measurement tool : individuals set high targets for themselves and work on difficult tasks, accept challenges happily and openly, have high self-motivation, make various efforts to achieve targets that have been made, persistent when facing obstacles. Optimism measurement follows Luthans et al., (2007) indicators : namely ability to feel more realistic and flexible, ability to think positively, enthusiasm and discipline, ability to analyse past mistakes, and ability to prevent bad things from happening.

Results and Discussion

Table 1 shows the characteristics of respondents covering age, gender, and work experience. Based on age, 72 respondents were aged 20-30 years, 54 respondents were aged 31-40 years, and 29 respondents were aged 40 years and over. Respondents consisted of 55 males and 66 females. In terms of educational level, 96 respondents have an undergraduate education level and 25 respondents have a master's level. Concerning work experience, 97 respondents have worked for 1-2 years, while 9 respondents have worked for 3-4 years, and 102 respondents have worked for more than 4 years.

Table 1. Characteristics of Respondents

Category	Alternative responses	Number	%
Age	20 - 30 years	33	27.30%
	31 - 40 years	66	54.50%
	>40 years	22	18.20%
Gender	Male	55	45.50%
	Female	66	54.50%
Educational level	S1	96	79.3%
	S2	25	20.70%
Length of work	1 - 2 years	9	7.40%
	3 - 4 years	10	8.30%
	> 4 years	102	84.3%

To identify the effect of self-leadership on innovative behavior in the workplace with self-efficacy and optimism, the validity and reliability of the instrument were tested. The convergent validity of the measurement model can be seen from the correlation between the indicator scores and the variable scores. The indicator is considered valid if it has an AVE value higher than 0.5 or shows all outer loading dimensions of the variable with a loading factor value of > 0.5 (Ghozali, 2018).

Table 2. Loading Factor and AVE

Variable	Indicator	Loading Factor	AVE	Status
Innovative Work Behavior (IWB)	IWB1	0.798	0.649	Valid
	IWB2	0.745		Valid
	IWB3	0.819		Valid
	IWB4	0.800		Valid
	IWB5	0.888		Valid
	IWB6	0.774		Valid

Variable	Indicator	Loading Factor	AVE	Status
Optimism	OP1	0.726	0.560	Valid
	OP2	0.792		Valid
	OP3	0.733		Valid
	OP4	0.785		Valid
	OP5	0.719		Valid
	OP6	0.724		Valid
	OP7	0.753		Valid
Self-efficacy	SE1	0.775	0.589	Valid
	SE2	0.783		Valid
	SE3	0.772		Valid
	SE4	0.745		Valid
	SE5	0.717		Valid
	SE6	0.809		Valid
Self leadership	SL1	0.737	0,581	Valid
	SL2	0.813		Valid
	SL3	0.783		Valid
	SL4	0.715		Valid
	SL5	0.755		Valid
	SL6	0.718		Valid
	SL7	0.772		Valid
	SL8	0.792		Valid
	SL9	0.772		Valid

Based on Table 2, all instruments in the study had an AVE value higher than 0.5 and all outer loading dimensions of the variables had a loading factor value of > 0.5 . Thus, it can be said that all instruments in this study are valid or have good convergent validity.

Table 3. Cronbach's Alpha and Composite Reliability

Variable	Cronbach's Alpha	Composite Reliability	Status
Optimism	0.869	0.899	Reliable

Innovative Work Behavior	0.891	0.917	Reliable
Self-efficacy	0.860	0.896	Reliable
Self-leadership	0.910	0.926	Reliable

Referring to (Ghozali, 2018), reliability is a tool to measure a questionnaire which is an indicator of a variable or constructs. A questionnaire is considered reliable if the respondent's answer to the statement is consistent and stable from time to time. The criteria for testing the reliability of the questionnaire are if Cronbach's alpha > 0.60 or 60% and the composite reliability value is higher than 0.6, then the construct has high reliability as a measuring tool and the item or variable is reliable and vice versa.

The evaluation of the PLS structural model was started by looking at the R-square of each dependent latent variable. Table 4 shows the result of R-square estimation using PLS.

Table 4. Results of Goodness of Fit

Variable	R-Square	R-Square Adjusted
Optimism	0.491	0.487
Innovative Work	0.834	0.830
Self-efficacy	0.533	0.529

Based on table 4, the adjusted R-Square value of the Optimism variable is 0.487. This means that the optimism variable can be explained by the self-leadership variable of 48.7% and the remaining 51.3% can be explained by other variables outside this study.

The PLS statistical testing of each hypothesis used simulation by bootstrapping the sample. The results of testing the effect of optimism on innovative behavior showed a coefficient value of 0.333, a p-value of 0.000, and a t-count value of 3.755. The p-values of 0.00019 are lower than 0.05 and the t-count value of 3.755 is higher than the t-table of 1.96. This indicates that optimism has a positive and significant direct effect on innovative behavior. This is in line

with (Rego et al., 2012) that optimistic individuals tend to be more creative. Thus, optimism will help teachers to come up with and apply innovative approaches in completing challenging assignments.

Tabel 5. Contribution of Each Variable

Variable	T-count	P-values	Status
Optimism -> Innovative Work Behavior	3.755	0,00019	Accepted
Self-efficacy -> Innovative Work Behavior	5.988	0,00000	Accepted
Self-leadership -> Optimism	11.604	0,00000	Accepted
Self-leadership -> Innovative Work Behavior	3.642	0,00030	Accepted
Self-leadership -> Self-efficacy	15.263	0,00000	Accepted
Self-leadership -> Optimism -> Innovative Work Behavior	3.279	0,00112	Accepted
Self-leadership -> Self-efficacy -> Innovative Work Behavior	5.531	0,00000	Accepted

The results of the Self-efficacy test on Innovative Behavior directly show a coefficient value of 0.477, a p-value of 0.000 which is lower than 0.05, and a t-count value of 5.988 which is higher than the t-table of 1.96. These indicate that self-efficacy has a direct positive and significant effect on Innovative Behavior. This is in line with (Rulevy & Parahyanti, 2018) that employees with high self-efficacy tend to have high levels of innovative behavior. It can be said that the higher the teachers' confidence in their abilities, the greater their desire to explore opportunities and generate ideas into innovations for better education. Teachers with high self-efficacy show a higher tendency to perform challenging tasks creatively.

The results of the self-leadership test on optimism directly show a coefficient value of 0.701, p-values of 0.000 which is lower than 0.05, and t-count value of 11.604 which is lower than the t-table

value of 1.96. These indicate that Self leadership has a direct positive and significant effect on Optimism. This is in line with (Neves, 2020) that self-leadership has a positive effect on the relationship with optimism. It can be said that self-leadership can be developed to increase teachers' optimism because optimistic individuals tend to have positive strengths and expectations about results. Thus, they become more creative to present newer results and effective solutions to improve current situations. Besides, optimistic individuals pursue new outcomes and creative approaches to problem-solving.

The results of the Self-leadership test on Innovative Behavior directly show a coefficient value of 0.200, a p-value of 0.00030 which is lower than 0.05, and a t-count value of 3.642 which is higher than the t-table of 1.96. These indicate that self-leadership has a direct positive and significant effect on Innovative Behavior. This is in line with (Sarmawa et al., 2017; Kör, 2016) that self-leadership has a significant effect on innovative behavior. It can be said that individuals who have strong self-leadership are more likely to have a high innovative behavior than those with low self-leadership. Thus, self-leadership helps teachers to develop IWB by providing individuals with self-management, self-motivation and self-influence on their own thoughts and/or behavior. The development of innovative behavior in organizations becomes easier with self-leadership skills including the process of self-influence and self-management. Thus, organizations that seek to facilitate IWB need to realize the importance of individual self-leadership skills.

The results of the self-leadership test on self-efficacy directly show a coefficient value of 0.730, p-values of 0.000 which is lower than 0.05, and t-count value of 15.263 which is higher than the t-table value of 1.96. These indicate that self-leadership has a direct positive and significant effect on self-efficacy. This is in line with (Prussia et al., 1998) that self-leadership significantly affects self-efficacy. Self-

leadership contributes to a direct and significant effect on self-efficacy. The basic assumption behind self-leadership is that individuals are said to be responsible and able to build and develop initiatives if there is no pressure from the above and external parties. They can monitor and control their own behavior (Aristayudha & Richadinata, 2020). The characteristics of self-leadership cover self-understanding, self-management, and self-development in order to increase self-efficacy.

The test results of Self leadership test on Innovative Behavior through Optimism show that Self leadership indirectly has a coefficient value of 0.233, a t-count value of 3.279 which is higher than a t-table value of 1.96, and a p-value of 0.00112 which is lower than 0.05. These results indicate that Self leadership has an indirect positive and significant effect on Innovative Behavior through Optimism. In line with (Neves, 2020) that optimism can be a mediating effect on self-leadership as self-leadership promotes a positive outlook (optimism) and positive self-efficacy to increase innovative behavior. Self-leadership can be developed to raise the cognition of subordinates in the form of optimism in order to support innovative behavior.

The results of the Self-leadership test on Innovative Behavior through Self-efficacy show that self-leadership indirectly has a coefficient value of 0.348, a t-count value of 5.531 which is higher than t-table of 1.96, and a p-value of 0.000 which is lower than 0.05. These indicate that self-leadership has an indirect positive and significant effect on innovative behavior through self-efficacy. This is in line with (Ibus & Ismail, 2018) that the mediating effect of innovative self-efficacy in the relationship between self-leadership and behavior reveals that the higher self-leadership, the higher the self-efficacy to be more innovative at work

Conclusion

The results of this study indicate that self-leadership and its strategies such as behavioral strategy, natural reward strategy, and constructive thinking strategy encourage teacher innovation. The literature shows that teachers can be trained to improve their self-leadership skills which leads to the improvement in their innovative attributes. Therefore, Schools need to develop behavioral strategy, natural reward strategy, and constructive thinking strategy to improve their overall innovative functioning. The findings of this study are important because Innovative Work Behavior (IWB) in teachers becomes the basis of competitive advantage in the current educational world.

The key point of this study is that the school environment requires educators to develop self-awareness and leadership competencies. Possessing some selected skills that lead to innovation and a high perception of innovation capabilities is not enough. Each educator has to have the ability to communicate ideas externally and receive ideas from external sources for innovative teaching. Teachers have to know how to apply their self-leadership skills to turn these ideas into innovative learning. Besides, future studies may consider other psychological dimensions such as expectancy and resilience which likely influence self-leadership strategies.

This study has some limitations. First, the use of items developed abroad causes inaccuracies in the Indonesian context. Thus, future studies are expected to develop items adapted to the Indonesian context. Second, the variables used are mostly applied to profit-oriented companies or organizations that differ from educational organizations. Thus, future studies have to develop items adapted to the educational context.

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