Teacher Adaptability Through E-Leadership and Vocational Work Environment in the Era of Digitalization

Melisa Nur Asima*, Aan Komariah, Diding Nurdin
Educational Administration, School of Postgraduate
Universitas Pendidikan Indonesia
Bandung, Indonesia
*melisanurasimasidabutar@gmail.com

Ima Rahmawati
Faculty of Tarbiyah and Teacher Training, Management of
Islamic Education
Sahid Entrepreneurial University
Bogor, Indonesia

Abstract—The aim of this research is to increase the adaptability of teachers through e-leadership and the work environment in facing the changes of vocational world in the digitalization era. The approach used in this research is quantitative with a survey method on 300 respondents as the research sample at the Bogor Regency Vocational High School. The data collection used closed-ended questionnaire with a Likert scale as the measurement. While the data analysis used measurement and structural evaluation models with the SEM PLS Ver. 3.0 application. The results of the research prove that there is a direct and significant influence between e-leadership and working environment on the adaptability of teachers in the era of digitalization.

Keywords—adaptability, e-leadership, work environment

I. INTRODUCTION

In the current era of digitalization, every country needs innovative human resources with 21st century capabilities. These capabilities are needed by the teachers as important human resources and assets for accomplishing educational purposes in the schools. As teachers may take on the role as the manager or administration of learning in the classroom; therefore, on this basis, teachers are required to have the abilities to face changes in terms of technology and science. In the context of vocational field, SMK teachers are emphasized to strengthen their response and adaptability towards changes in business and industry. SMK teachers are projected to be qualified human resources who are skilful and ready to meet the needs of the community. This notion is in line with the Minister of Industry Regulation No. 3 of 2017 and Presidential Instruction.

In practice, a teacher should be able to face changes in the era of the industrial revolution 4.0 and required to be adaptable in terms of learning both theoretically and mentally (self-readiness). This is in accordance with a research conducted by Oki, et al. [1] that defines the adaptability refers to an individual learning process in an attempt to understand and adapt to changes that occur in the surrounding environment.

Meanwhile, adaptation is a consequence of behaviour that arises in order to cope with certain changes and conditions [2-4]. Furthermore, adaptability is defined as an individual's ability influenced by a high level of self-optimism in adjusting and solving the problems [5-6]. Thus, adaptability also emphasizes on the individual's ability to organize both in the form of perceptions and responses to accept as well as understand the pressure or conflict which are coming from inside or outside as a part of survival. The factors that affect adaptability include:

- Change creation (change capability),
- Consumer Focus (focus on consumers), and
- Organizational learning (organizational learning capabilities.

In reference to the adaptability of teachers in the digital era, the teachers should thoroughly master leadership role in response to the changes in science, technology, and market share. In this case, e-leadership refers to the ability to understand the concept of technology in school management and mobilize the school human resources in order to create skilful, innovative, collaborative, adaptive and communicative human resources in achieving the quality of vocational education [7-15].

In practice, teachers are also one of the drivers of innovation and creativity in the learning process. Therefore, to be able to innovate, teachers must have a high ability to adapt to changes [16]. The work environment is defined as a condition around the scope of work both material and non-material. It relates on how to create and give impact on the pleasure, safety, peace and comfort in carrying the assigned tasks and indirectly influencing the effectiveness of organizational goals [17-25]. The factors that affect the work environment, namely:

- The non-material work environment includes interactions among the employees and between employees and superiors.

- Material work environment includes workspace, air circulation, cleanliness and comfortability [26].

In the context of vocational education, the teachers must be able to monitor changes that will occur in their working environment. This is in line with William who said that the work environment has a direct influence on adaptability [27].

II. RESEARCH METHODS

This study used a quantitative survey approach with the population of all permanent teachers at Vocational High Schools in Bogor Regency. 300 respondents become the sample of research by using cluster random sampling technique. The data collection used closed questionnaire with a Likert scale as the measurement.

The data analysis techniques used [28]:

- Evaluation of measurement models, namely: convergent validity, discriminant validity and composite reliability,
- Evaluation of structural models, and
- Hypothesis testing using the SmartPLS Ver. 3 application [28].

III. RESULTS AND DISCUSSION

Respondents of the research are 300 permanent teachers in Vocational High Schools Bogor Regency. After distributing closed questionnaires using Google form, the results of data processing are as follows:

A. Evaluation of the Measurement Model

In this evaluation there are three major criteria as follows:

1) Convergent validity: This measurement is based on the correlation of each item's score estimated by the SmartPLS application.

TABLE I.   OUTER LOADING

Variable	Indicator	Loading Factor
Teacher Adaptability	$Y_{1.1}$	0,894
	$Y_{1.2}$	0,914
	$Y_{1.3}$	0,852
E-Leadership	$X_{1.1}$	0,833
	$X_{1.2}$	0,850
	$X_{1.3}$	0,863
	$X_{1.4}$	0,836
Work environment	$X_{2.1}$	0,897
	$X_{2.2}$	0,808
	$X_{2.3}$	0,872
	$X_{2.4}$	0,894

The results in Table 1 showed that the outer model/correlation value between the construct and the research variable met the convergent validity. This is because the loading factor value is > 0,07 which means all the constructs proposed in the research variables can be used to test the hypothesis.

2) Discriminant validity

TABLE II.   VALUE OF DISCRIMINANT VALIDITY

Construct	Adaptability	E-Leadership	Work environment
$Y_{1.1}$	0,894	0,629	0,588
$Y_{1.2}$	0,914	0,658	0,646
$Y_{1.3}$	0,852	0,618	0,617
$X_{1.1}$	0,581	0,833	0,550
$X_{1.2}$	0,715	0,850	0,563
$X_{1.3}$	0,564	0,863	0,609
$X_{1.4}$	0,523	0,836	0,568
$X_{2.1}$	0,588	0,801	0,897
$X_{2.2}$	0,554	0,524	0,808
$X_{2.3}$	0,581	0,576	0,872
$X_{2.4}$	0,547	0,641	0,894

Based on this Table 2, the loading factor value for the indicator in each latent variable has a greater loading value than the loading value in other variables. This means that these latent variables have good discriminant validity.

3) Composite reliability

TABLE III.   COMPOSITE RELIABILITY AND AVERAGE VARIANCE EXTRACTED

Variable	Composite Reliability	Average Variance Extracted
Adaptability	0,921	0,701
E-Leadership	0,909	0,667
Work environment	0,911	0,673

From the data processing, it can be interpreted that all the proposed constructs meet the reliable criteria as indicated by the composite reliability value> 0,70 and AVE > 0,05 (in Table 3).

B. Structural Model Evaluation

The structural model is evaluated by looking at the percentage of variance described through R2 for the latent construct of the dependent variable using the Stone-Geisser Q Square Test measurement and the Structural Path Coefficient as proposed in the study. Then the results of the estimated stability through the bootstrapping procedure by testing the t-statistic are:
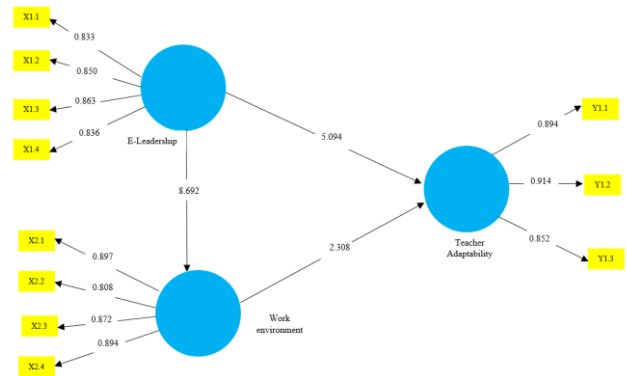

Fig. 1. Inner model.

The results in Figure 1 of the R-Square present the number of variants of each construct described by the model. The calculation results obtained the R-Square value, namely:

TABLE IV. R-Square Value

No.	Variable	R-square
1	Work environment	0,397
2	Teacher Adaptability	0,666

So, based on Table 4, it can be seen that the R-Square value for the work environment variable is 0,397, which means that the contribution of the work environment is 39,7% in increasing the adaptability of teachers through e-leadership. Meanwhile, the contribution of adaptation ability through e-leadership and the work environment was 66,6%. Furthermore, the decency of fit assessment can be seen from the Q-square value. In this study, it was found that the Q-square value was 0,80. This shows the diversity of the research data described by the model is 80%; whereas the remaining 20% is explained by other factors outside the research model. Thus, these results also state that the model is fit and appropriate.

C. Hypothesis Testing

From the data processing, the results were then used to answer the hypothesis in this study. It mainly referred to the T-Statistics value and the P-Values value as follows:

TABLE V. T-statistics and P-Values

Hypothesis	Influence	T-statistics	P-Values	Result
H1	E-Leadership → Teacher Adaptability	5,094	0,000	Received
H2	E-Leadership → Work Environment	8,692	0,000	Received
H3	Work Environment → Teacher Adaptability	2,308	0,000	Received

Based on the data as seen in the Table 5, the three hypotheses in the proposed study have p-value < 0,05 and T-statistic value > T-table (1,96). This means that the three hypotheses can be accepted. Moreover, it indicates that all the constructs have a significant effect.

The results of this study are similar to the previous research which states that leadership has a significant effect on the work environment [29]. The principal as a leader should be able to create conducive atmosphere in his working environment (school) [30-31]. In practice, e-leadership also creates a conducive and innovative working environment and increase the adaptability of teachers to be able to compete in the digital world of work and industry. Principals who have e-leadership abilities will show visionary, innovative, collaborative behaviour as well as provide inspiration, motivation, and stimulation to all the teachers.

IV. Conclusion

Based on the research results, it can be concluded that:

- E-leadership of the principal has a significant effect on the teachers' adaptability. This is due to the ability of the principal's digital understanding to be able to move and influence teachers in dealing with changes, especially in terms of technology, so the teachers are able to adapt well.

- E-leadership of school principals has a significant effect on the work environment. The e-leadership ability will certainly motivate teachers and create a creative and innovative working environment.

- The positive working environment has a significant effect on teachers' adaptability. If the work environment for both physically and socially is adequate, it will create a more conducive sense. Afterwards, teachers will be able to adapt well to the changes as well as competitions in the vocational world. In addition, it will have an impact on improving the innovative performance of the teacher and also have an impact on the quality of learning and the quality of vocational graduates.

V. Implications and Suggestions

Increasing adaptability in the schools thoroughly requires leadership support and a good working environment. Moreover, it is also necessary to increase the motivation and self-efficacy of teachers through various professional trainings in accordance with the expertise programs available at each SMK. If the adaptability of teachers is improved, it will contribute to a good quality of education in SMK.

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