

# THE ROLE OF E-LEARNING IN THE ERA OF INDUSTRIAL REVOLUTION 4.0, AND COLLABORATIVE LEARNING

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## THE ROLE OF E-LEARNING IN THE ERA OF INDUSTRIAL REVOLUTION 4.0, AND COLLABORATIVE LEARNING ON EMPLOYEE PERFORMANCE MEDIATED THROUGH TRAINING

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### 27 Abstract

The purpose of this study is to investigate the role of e-learning, the era of the industrial revolution 4.0, and collaborative learning on employee performance mediated by training. In order to achieve the goal of the study, we conducted a survey study in Bank of Mandiri by distributing 133 questionnaires. Based on 100 usable data, we analyzed the data by using SmartPLS. The analysis found that the industrial revolution era 4.0 has a positive effect on training that leads to the improvement of employee's performance. This study suggests that the competitiveness in the industrial revolution era 4.0 stimulates members of an organization to increase both the quality and quantity of training that can leverage employees' performance.

**Keywords:** E-Learning, Industrial Revolution Era 4.0 and Collaborative Learning mediation Training on Employee Performance

### 1. Research Background

A development process in company may happen if a company can respond to changes in the environment, technology and science (Yuliansyah & Jermias, 2018). One of the company's strategies to respond to these environmental changes is to prepare high quality human resources by improving learning. In the digital era, learning is not only carried out directly on employees but it can also be indirectly face-to face with employees. This method is called e-learning (Cidral, Oliveira, Di Felice & Aparicio, 2018; Mayer, 2017; Welsh, Wanberg, Brown, & Simmering, 2003). The purpose of this study is to investigate the role of e-learning and collaborative learning in training in improving employees' performance.

Increased use of information technology in the digital age has made major changes in the process of enhancing learning capabilities for employees (Derouin, Fritzsche, & Salas, 2005; Welsh et al., 2003). Research on training using the company's e-learning device must always be able to adapt individuals to various knowledge and skills anytime and anywhere (Mayer, 2017). In order to maintain the progress of the development in the organization, it has become an obligation for an organization to foster its employees so that their expertise can be improved.

One of the efforts that needs to be made is to increase the capabilities through employee training and development.

Employee training and development is a company's asset because it drives creativity and innovation in a company that can enhance the company's reputation and profits over a long period (Truitt, 2011). In the midst of intense industry competition, companies must not only recruit employees based on their talents and abilities but also retain their employees to improve their abilities and skills.

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The world is now entering the Era of Industrial Revolution 4.0 where information technology has become the basis in human life. Everything becomes borderless with unlimited use of computing power and data, because it is influenced by the development of the massive internet and digital technology as the backbone of human movement and connectivity, as well as machine. Currently, the development of increasingly sophisticated technology required to be able to explore all the human resources will support our performance and will greatly affect the implementation of tasks every day. Even the system of facilities and infrastructure in organizations can continue to develop and refined over time, so that an organization may be developed in accordance with the existing human resources. Many experts argue that the high-quality human resources will determine the success or failure of an organization with the competence of every employee. To form such apparatus figure does require a long time continued process and efforts. This era will also disrupt various human activities. The problem of human resources is one of the important elements in the organization. Human sources play a role in determining the direction and progress of an organization. The integration of information technology into the business world has created a major influence. By utilizing the sophistication of information technology, knowledge management systems in the company can be used efficiently, effectively, and sustainably. One product of the integration of information technology into the business world is E-Learning or electronic learning. Currently E-Learning is starting to take the attention of many parties, both from academics, professionals, companies, and industries.

## 2. Literature Review

Electronic Learning (henceforth, E-Learning) is a new way of teaching and learning. E-learning is learning by using electronic services as tools to help, which are not limited by space and time. Electronic learning system or E-Learning is the basis of the logical consequences of the development of information and communication technology. Using e-learning, teaching participants (learners) can play an active role in searching for information and new knowledge.

E-Learning is a learning system that utilizes electronic media as a tool to assist learning activities. The use of E-learning that currently exists greatly varies, but all is based on the principle or concept that e-learning is intended as an effort to distribute learning materials through electronic media or the internet. There are three important characteristics in e-learning learning. Firstly, e-learning deals with electronic networks to convey information and instruction. Secondly, e-learning is delivered to learners using computers with internet technology. Thirdly, learning solutions that go beyond traditional training include the delivery of information and tools to improve performance.

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The rapid technological development directs banks to further improve services by forming digital banking. It is intended to maximize the performance in its services to customers and improve operational quality. It is supported by employee training through technology so that it is expected that the bank can develop itself. Digital banking is also designed to enable customers to carry out their transactions independently, such as: opening an account, obtaining information, closing accounts and other transactions with customers. The banking industry is demanded to be able to meet the needs of the community for a fast service process.

The industrial revolution is a fundamental change in the way of life and human work, where the advancement of information technology can integrate the world of life into digital formats that can have impacts on all disciplines. The development of information technology that is rapidly experiencing breakthroughs such as in the field of Artificial Intelligence is a discipline that adopts one's expertise into a technology-based application and gives birth to information technology and production processes controlled automatically. The birth of current digital technology in the 4.0 industrial revolution has affected human life throughout the world. In the Industrial Revolution 4.0, all processes are carried out in an automated system in all activation processes, where the development of internet technology is increasingly not only connecting people throughout the world but also becoming a basis for online trade and transportation transactions.

The era of the industrial revolution 4.0 will produce product development faster and create diverse consumers and have an impact on real cheap prices. The changes in this era are not only in the way or strategy in the marketing process on the fundamental aspects but also in ..... Firstly, business model revolution in the Industrial Era 4.0 provides solutions to the problems faced by society. Secondly, in this era, people are never satisfied with the results they have achieved, so they keep trying to innovate. Thirdly, new monopolistic models of capitalism, where the business model of corporate companies in this era adheres to the understanding of sharing economy, can be perceived as a solution to economic inequality. Fourthly, It is due to the marketing model 3.0. While marketing in Era 1.0 focuses on products, the Era 2.0 marketing focuses on consumers, then marketing 3.0 is more the previous eras, in that, the company sees consumers not only as users of products but also humans seen from their multi dimensions. So consumers will choose products that satisfy their desire to participate, create, join community and idealize.

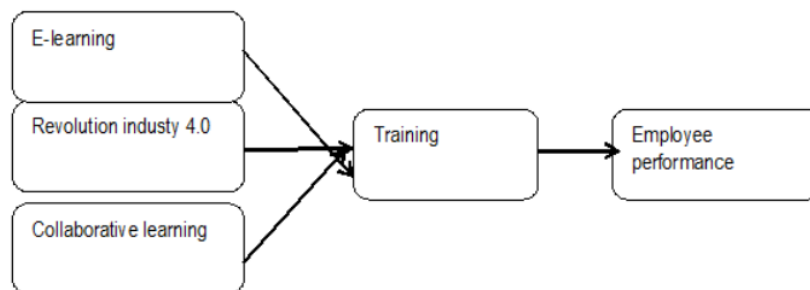
The use of technology such as digital banking in service innovation as a training medium to shape and impart more knowledge to meet the needs of customers is best understood in relation to the use of services and how they feel the services. Employees in all fields in the Industrial Revolution Era 4.0 are required to have digital skills. Service is not limited to serving, but understanding and feeling. Submission in services will be about the customer's heart share. Heart share and mind share can foster customer loyalty to a product. So as to have a positive impact on the company's image, service delivery in conventional companies has a use process. People provide services in physical form as well as possible measuring Servqual by using indicators of control, guarantees, tangibles, responsiveness, and empathy. In the digital age, new models are needed because customer priorities in getting direct services may not apply, for example, politeness, friendliness, and personal care. A new measure of service quality that moderates customer satisfaction in digital banking has emerged. This is what has

been captured as a potential and opportunity by banks to increase the interest of prospective customers<sup>20</sup>, and provide services so that customers become loyal.

Collaborative learning is a situation where two or more people are learning or trying to learn something together (Jeong & Hmelo-Silver<sup>2</sup>, 2016; Retnowati, Ayres, & Sweller, 2017). Unlike learning individually, people involved in collaborative<sup>2</sup> learning utilize each other's resources and skills (asking for information from each other, evaluating each other's ideas<sup>4</sup>, monitoring each other's work, etc.) (Al-Samarraie & Saeed, 2018). More specifically, collaborative learning is based on a model in which knowledge can be created in a population where members actively interact by sharing experiences and taking on different asymmetric roles. In other words, collaborative learning refers to the environment and methodology of the activities in which students are doing a general task and each individual is dependent and is responsible to one another (Al-Samarraie & Saeed, 2018; Jeong & Hmelo-Silver, 2016). This also includes face-to-face conversations and discussions with computers (online forums, chat rooms, etc.).

Training can be defined as activities with the aim of increasing the effectiveness of individual work or specific job roles in an organization (McDowall & Saunders, 2010; Truitt, 2011). Training is a program designed and provided by companies to employees in training<sup>435</sup> developing knowledge and abilities that later can be used for their careers or promotions (Van Vianen, Dalhoeven, & De Pater, 2011). Training is a planned effort to facilitate employee learning about work-related knowledge, skills and behaviors (Costen & Salazar, 2011; McDowall & Jackling, 2010). Training is not only the responsibility of the organization, but also the responsibility of employees personally. This is because both the organization and employees will benefit from the training. The benefits of training can be beneficial for employees, organizations, and human resource relations within and between groups (Aguinis & Kraiger, 2009)

The level of performance expected in an organization<sup>17</sup> with regard to its goals or targets depends on the approach taken. A good standard of work must be realistic, measurable and easily understood so that it benefits the organization and employees (Koopmans et al., 2013; Santos & Stuart, 2003). The expected level of a particular job is to be completed with regard to the goals or targets achieved, while the work results are the results obtained by an employee in doing the work according to job requirements or performance standards (Koopmans et al., 2013).



**Figure 1: Research Framework**

Based on the theoretical relationships described above, several research hypotheses can be formulated, including the following:

H1: There is a positive and significant effect of Collaborative Learning on Employee Performance

H2: There is a positive and significant effect of E-Learning on Employee Performance

H3: There is a positive and significant effect of the Training on Employee Performance

H4: There is a positive and significant influence of the Industrial Revolution Era 4.0 on Employee Performance

### 3 Research Methodology

This study used a survey study of PT. Bank Mandiri, (Persero) Tbk, PT. We chose the banking industry because the banking industry is identified to have a high level of competition between one another in using information technology (Yuliansyah, 2015; Yuliansyah, Triwacananingrum, Mohd-Sanusi, & Said, 2019). While Bank Mandiri was selected as the sample because Bank Mandiri is one of the leading and largest banks in Indonesia. Bank Mandiri is established from the merger merger of four banks located in Indonesia, namely Bank Bumi Daya, Bank Dagang Negara, Bank Pembangunan Indonesia dan Bank Expor Impor.

The primary data processed in this study were gained from from the respondents' answers in the form of research instruments (questionnaires), then the quality of the data was determined by the extent to which the research instruments meet the validity and reliability criteria. Before the data processing was performed, the research instrument first was tested for its validity and reliability. Verification analysis was carried out to determine the relationship between variables through hypothesis testing. In this study, researchers conducted a verification analysis using SmartPLS 3.0 (Software for Partial Least Squares) software.

PLS can be used to analyze and construct reflective indicators and formative indicators. In addition, flexibility and size dimension algorithms are not a problem and can be analyzed with many indicators (Ghozali, 2008).

### 4. Results

The Analysis of this research data was carried out through SmartPLS software. The reasons for using the SmartPLS software were due to the characteristics of the data which were 1) non-normal data, and 2) small sample (Birkinshaw, Morrison, & Hulland, 1995; Hulland, 1999). Two-sequential steps in operating smartPLS included measurement model and structural model (Hair Jr, Hult, Ringle, & Sarstedt, 2016; Patricia Oom do & Guy, 2015; Smith & Langfield-Smith, 2004)

#### 4.1 Measurement model

Measurement model can be done by testing the validity and reliability. Validity measurement can be calculated by measuring convergent validity by looking at AVE scores with a minimum of 0.5 and discriminant validity: cross loading and latent variables. While the reliability test can be measured by using composite reliability and Cronbach alpha. Table 1 shows the

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measurement model consisting of discriminant validity (Factor / Cross Loading), Convergent Validity (AVE) and reliability (composite reliability and Cronbach alpha).

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**Table 1:** Factor Loadings, Composite Reliability, Cronbach's Alpha dan AVE

Constructs	33 Items	Factor Loadings	Composite Reliability	Cronbach's Alpha	AVE
32 e-learning	EL1	0.731	0.901	0.868	0.604
	EL2	0.806			
	EL3	0.746			
	EL4	0.719			
	EL5	0.690			
	EL6	0.720			
	EL7	0.763			
	EL8	0.650			
Industry revolution 4.0 era	37 ER1	0.766	0.936	0.923	0.618
	ER2	0.735			
	ER3	0.776			
	ER4	0.758			
	ER5	0.817			
	ER6	0.789			
	ER7	0.784			
	ER8	0.813			
	ER9	0.812			
Collaborative learning	CL1	0.770	0.944	0.932	0.618
	CL2	0.856			
	CL3	0.839			
	CL4	0.767			
	CL5	0.852			
	CL6	0.836			
	CL7	0.773			

	CL8	0.884			
Training	TR1	0,896	0.916	0.878	0.733
	TR2	0,909			
	TR3	0,862			
	TR4	0,750			
Employee Performance	EP1	0,847	0.932	0.902	0.774
	EP2	0,894			
	EP3	0,913			
	EP4	0,863			

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Table 1 shows that all scores of Factor Loadings, Composite Reliability and Cronbach's Alpha are more than 0.6. Hulland (1999) states that a score of 0.6 is valid and reliable. As seen in Table 1, the validity and reliability are adequate. While AVE is said to be good if it has a score more than 0.5. (Al-Gahtani, Hubona, & Wang, 2007; Barclay, Higgins, & Thompson, 1995; Burton-Jones & Hubona, 2006). It can be seen from Table 1 that the AVE value of each variable is more than 0.5 so that it can be said to be discriminatory valid based on AVE. Therefore, all indicators / variables can be accepted. As indicated in Table 4.7 and the figure, the Fornell-Larcker method is performed by comparing square roots over AVE with latent vertical correlation (Al-Gahtani et al., 2007). As indicated in Table 3, the square roots over AVE with vertical latent correlations are greater than other constructs. Thus, discriminant validity by using Latent Variable Correlation for this study is feasible.

**Table 2.** Latent Variable Corelation

	E-Learning	Industry revolution 4.0 era	Collaborative Learning	Training	Employee Performance
E-Learning	0.694				
Industry revolution 4.0 era	0.823	0.771			
Collaborative Learning	0.781	0.602	0.823		
Training	0.625	0.73	0.83	0.88	
Employee Performance	0.659	0.712	0.63	0.734	0.856

#### 4.1.The assesment of structural model



The Inner Model can be done in three ways. The third way is by looking at R Square (R<sup>2</sup>), The Predictive Relevance (Q<sup>2</sup>) and The Goodness of Fit (GoF). The formula Q<sup>2</sup> is  $Q^2 = 1 - (1 - R^2) / (1 - R^2_2) \dots (1 - R^2_p)$ , while the GoF formula is, the GoF value on PLS-SEM must be searched manually. Inner model analysis or structural model was performed to see the relationship between variables / constructs related to the significance value of the research model. The structural model was evaluated by using its significance value based on the t-statistic value. To see the results of the Inner model evaluation on SmartPLS 3.2 software, bootstrapping process can be done. The following is a picture of the output display of the structural model after the bootstrapping process:

**Table 3. Path Coefficients**

	T Statistics (IO/STERRI)	P Values	
Collaborative Learning -> Training	0.306	0.760	Insignificant
Training -> Employee Performance	13.274	0.000	Significant
E-Learning -> Training	0.859	0.391	Insignificant
Revolutional Industrion 4.0 -> Training	3.934	0.000	Significant

As seen in Table 3, there is a direct positive effect of Collaborative Learning on Training but it is not significant, because the P Value of 0.760 is (> 5%). It appears that there is a significant direct positive effect of Training on Employee Performance since the P-Values is <5%. It appears that there is no significant direct effect of E-Learning on Training because the value is >5%. It appears that there is a significant and positive direct effect of the Industrial Revolution Era 4.0 on Training because the P Values is <5%.

#### 4.2. Hypothesis Testing

##### **H<sub>1</sub>: There is a positive and significant effect of Collaborative Learning on Training**

Based on the test result, it shows that the original sample has a positive value of 0.048 and shows a t-Statistic value of 0.306 or 30.6% (>1.96) and p-Values of 0.760 or 76.0% (not according to the significance criteria <5%) so that it can stated as insignificant. From the test result, it can be explained that Collaborative Learning has an effect (4.8%), but it is insignificant (76.0%) on Training. Based on these results it can be concluded that H<sub>1</sub> is rejected.

##### **H<sub>2</sub>: There is a positive and significant effect of Training on Employee Performance**

Based on the test result, it shows that the original sample has positive value of 0.733 and shows the t-statistic value of 13,274 or 13,274% (> 1.96) and p-Values of 0,000 or 0.00% (according to the significance criteria <5%) so that it can stated as significant. From the test results, it can be explained that the Training has a positive effect (73.3%) and it is significant (0.00%) on Employee Performance. Based on these results it can be concluded that H<sub>2</sub> is accepted.

##### **H<sub>3</sub>: There is a positive and significant effect of E-Learning on Training.**

Based on the test result, it shows that the original sample has a positive value of 11.8 and shows a t-statistic value of 0.859 or 85.9% ( $>1.96$ ) and p-Values of 0.391 or 39.1% (not according to the significance criteria  $<5\%$ ) so that it can be stated as insignificant. From the test result, it can be explained that E-Learning has no positive effect (11.8%) and it is insignificant (39.1%) on training. Based on these results it can be concluded that H3 is rejected

#### **H4: There is a positive and significant influence of the Industrial Revolution Era 4.0 on Training**

Based on the test result, it shows that the original sample has a positive value of 0.589 and shows a t-Statistic value of 3,934 or 3,934% ( $>1.96$ ) and p-Values of 0,000 or 0.00% (according to the significance criteria  $<5\%$ ) so that it can be stated as significant. From the test results it can be explained that the Industrial Revolution Era 4.0 has a positive effect (58.9%) and it is significant (0.00%) on training. Based on these results, it can be concluded that H4 is accepted.

### **Research Interpretation**

#### **a. There is no significant effect of Collaborative Learning on Training**

Partial testing shows that there is no positive Collaborative Learning effect on Training, meaning that the management of employees at PT. Bank Mandiri Tbk has not been able to significantly and directly influence the training of employees who have low performance, and it also has no direct effect on improving Employee Performance at PT. Bank Mandiri Tbk.

#### **b. The Effect of Training on Employee Performance**

The results of this study indicate that one of the indicators in training measurement is training and development to support career and job needs, training and development materials that can be applied in working, training and development to add knowledge and skills, training and development to increase ability and work achievement. The training and development has significant effects on employee performance to control the progress of employee performance in the completion of work in accordance with the target determined by the company, in the completion of tasks within the given time limits, and in adjustment of changes occurring within a schedule, in punctual submission of work given by the leaders, in the completion of work given by leaders in a short time to the employees of PT. Bank Mandiri Tbk. The training in this research was carried out for career development process together with electronic learning and the support of the availability of a new system for employees in order to obtain high performance.

#### **c. There is no influence of E-Learning on Training**

Partial testing shows that there is no positive and significant influence of E-Learning on training, meaning that Electronic Learning Media (Mandiri Easy) cannot provide results quickly and E-Learning Materials (Mandiri Easy) up to date and it is not easy to use & understand. Testing methods such as Tasks Through the E-Learning System (Mandiri Easy) Are Fair / Fair to the employees of PT. Bank Mandiri Tbk, is already good and must be applied more consistently to employee engagement / satisfaction at work, or the better the management of knowledge, the more employee satisfaction and engagement increases at work.

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**d. The Effect of the Industrial Revolution Era 4.0 on Training**

Partial testing shows that there is a positive and significant influence of the Industrial Revolution Era 4.0. The availability of E-Learning Technology (Mandiri Easy) influences employees' knowledge. The availability of E-Learning Technology (Mandiri Easy), which follows the more advanced era, encourages better employee performance quickly. The availability of E-Learning Technology (Mandiri Easy) affects facilitating work tasks and an appropriate learning source. And E-Learning (Mandiri Easy) improves employees' performance towards influencing training, which means that the Training to Support Career Needs and Job Needs and materials in training can be implemented and used in the work, to add knowledge and skills. In an effort to improve work performance of PT. Bank Mandiri Tbk employees, the training has a significant effect on employee performance at PT. Bank Mandiri Tbk.

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**Conclusion**

Based on the discussion in the previous section, the results of data analysis and hypothesis testing partially and simultaneously can be concluded as follows:

1. Collaborative Learning does not have a positive and significant influence on the Mediated Training of PT. Bank Mandiri Tbk .,
2. Mediated Training has a positive and significant effect on Employee Performance at PT. Bank Mandiri Tbk.
3. E-Learning has no positive and significant influence on Mediated Training for Employees of PT. Bank Mandiri Tbk.
4. Industrial Revolution Era 4.0 has a positive and significant influence on Mediated Training for Employees of PT. Bank Mandiri Tbk

This research has several important implications, especially for PT. Bank Mandiri Tbk., so that the organization can improve the employees' performance. Firstly, based on the results of the study, it can be seen that PT. Bank Mandiri Tbk still needs to enhance Employees' interaction or influence their interaction in improving performance and seeking or obtaining more complete information about how to improve employees' performance of PT. Bank Mandiri Tbk. Secondly, based on the use of E-Learning in the Industrial Revolution Era 4.0, PT. Bank Mandiri Tbk needs to improve digital skills in the availability of E-Learning Technology (Mandiri Easy) as a process of knowledge enhancement. Finally, E-Learning, Industrial Revolution Era 4.0, Collaborative Learning, and Mediated Training of Employee Performance need to be improved especially the ability to work in an allotted time given by the leader, to be able to complete the work given by the leader in a short time, and to have extensive knowledge and skills.

**REFERENCES**

1. Aguinis, H., & Kraiger, K. 2009. Benefits of training and development for individuals and teams, organizations, and society. *Annual review of psychology*, 60: 451-474.
2. Al-Gahtani, S. S., Hubona, G. S., & Wang, J. 2007. Information technology (IT) in Saudi Arabia: Culture and the acceptance and use of IT. *Information & Management*, 44(8): 681-691.

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3. Al-Samarraie, H., & Saeed, N. 2018. A systematic review of cloud computing tools for collaborative learning: Opportunities and challenges to the blended-learning environment. *Computers & Education*, 124: 77-91.
4. Barclay, D., Higgins, C., & Thompson, R. 1995. The partial least squares (PLS) approach to causal modeling: Personal computer adoption and use as an illustration. *Technology Studies*, 2(2): 285-309.
5. Birkinshaw, J., Morrison, A., & Hulland, J. 1995. Structural and competitive determinants of a global integration strategy. *Strategic Management Journal*, 16(8): 637-655.
6. Burton-Jones, A., & Hubona, G. S. 2006. The mediation of external variables in the technology acceptance model. *Information & Management*, 43: 706-717.
7. Cidral, W. A., Oliveira, T., Di Felice, M., & Aparicio, M. 2018. E-learning success determinants: Brazilian empirical study. *Computers & Education*, 122: 273-290.
8. Costen, W. M., & Salazar, J. 2011. The impact of training and development on employee job satisfaction, loyalty, and intent to stay in the lodging industry. *Journal of Human Resources in Hospitality & Tourism*, 10(3): 273-284.
9. Derouin, R. E., Fritzsche, B. A., & Salas, E. 2005. E-learning in organizations. *Journal of management*, 31(6): 920-940.
10. Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. 2016. *A primer on partial least squares structural equation modeling (PLS-SEM)*: Sage Publications.
11. Hulland, J. 1999. Use of partial least squares (PLS) in strategic management research: A review of four recent. *Strategic Management Journal*, 20(2): 195-204.
12. Jeong, H., & Hmelo-Silver, C. E. 2016. Seven affordances of computer-supported collaborative learning: How to support collaborative learning? How can technologies help? *Educational Psychologist*, 51(2): 247-265.
13. Koopmans, L., Bernaards, C., Hildebrandt, V., van Buuren, S., van der Beek, A. J., & de Vet, H. C. W. 2013. Development of an individual work performance questionnaire. *International Journal of Productivity and Performance Management*, 62(1): 6-28.
14. Mayer, R. E. 2017. Using multimedia for e-learning. *Journal of Computer Assisted Learning*, 33(5): 403-423.
15. McDowall, A., & Saunders, M. N. 2010. UK managers' conceptions of employee training and development. *Journal of European Industrial Training*.
16. McDowall, T., & Jackling, B. 2010. Attitudes towards the accounting profession: an Australian perspective. *Asian Review of Accounting*, 18(1): 30 - 49.
17. Patrícia Oom do, V., & Guy, A. 2015. Using Partial Least Squares Structural Equation Modeling in Tourism Research: A Review of Past Research and Recommendations for Future Applications. *Journal of Travel Research*, 55(6): 695-708.
18. Retnowati, E., Ayres, P., & Sweller, J. 2017. Can collaborative learning improve the effectiveness of worked examples in learning mathematics? *Journal of educational psychology*, 109(5): 666.
19. Santos, A., & Stuart, M. 2003. Employee perceptions and their influence on training effectiveness. *Human resource management journal*, 13(1): 27-45.

20. Smith, D., & Langfield-Smith, K. 2004. Structural equation modeling in management accounting research: critical analysis and opportunity. *Journal of Accounting Literature*, 23: 49-89.
21. Truitt, D. L. 2011. The effect of training and development on employee attitude as it relates to training and work proficiency. *Sage Open*, 1(3): 2158244011433338.
22. Van Vianen, A. E., Dalhoeven, B. A., & De Pater, I. E. 2011. Aging and training and development willingness: Employee and supervisor mindsets. *Journal of Organizational Behavior*, 32(2): 226-247.
23. Welsh, E. T., Wanberg, C. R., Brown, K. G., & Simmering, M. J. 2003. E-learning: emerging uses, empirical results and future directions. *International Journal of Training and Development*, 7(4): 245-258.
24. Yuliansyah, Y. 2015. Attributes Influencing Strategic Alignment in the Service Sector: An Indonesian Banking Sector Case Study. *International Journal of Business, Economics and Management*, 2(2): 34-48.
25. Yuliansyah, Y., & Jermias, J. 2018. Strategic performance measurement system, organizational learning and service strategic alignment: Impact on performance. *International Journal of Ethics and Systems*, 34(4): 564-592.
26. Yuliansyah, Y., Triwacananingrum, W., Mohd-Sanusi, Z., & Said, J. 2019. Enhancing Task Performance Of Bank Employees: The Relevance Of Trust, Self-Efficacy And Budget Participation. *International Journal of Business Excellence*.

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