

Analysis of Educational Information Technology and Training on Human Resource Development at SMA Negeri 7 Binjai

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Abstract

This research was conducted at SMA Negeri 7 Binjai using the variables of Educational Information Technology and Training as independent variables, then the Human Resource Development variable as the dependent variable. The population in this study were 70 people, with a data sample of 70 people using saturated samples. The data analysis technique in this study uses multiple linear regression, classical assumptions and hypothesis testing. The results showed that Educational Information Technology and Training simultaneously had a positive and significant influence on Human Resource Development at SMA Negeri 7 Binjai, with an F_{count} value of $90.239 > F_{\text{table}}$ of 3.99 at sig. $0,000 < 0,05$. Educational Information Technology partially has a positive and significant effect on Human Resource Development at SMA Negeri 7 Binjai ($t_{\text{count}} > t_{\text{(table)}}$, $2.267 > 1.994$ at sig. $0,018 < 0,05$). Training partially has a positive and significant effect on Human Resource Development at SMA Negeri 7 Binjai ($t_{\text{count}} > t_{\text{(table)}}$, $8.698 > 1.994$ at sig. $0,000 < 0,05$). Based on the *adjusted R Square* number 0.738 which can be called the coefficient of determination, which in this case means that 73.8% of Human Resource Development can be obtained and explained by Educational Information Technology, Training. While the remaining $100\% - 73.8\% = 26.2\%$ is explained by other factors or variables outside the model, Leadership, Organizational Culture, and others.

Keywords: Educational Information Technology, Training, Human Resource Development

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Introduction

Human resource development is a systematic effort to improve the skills, knowledge, and attitudes of individuals in order to optimally achieve organizational goals. In this context, technology provides solutions through various platforms and tools that support the learning process and individual capacity building. Examples of technologies that are widely used include *Learning Management System (LMS)*, *Artificial Intelligence (AI)* for performance appraisal, *Virtual Reality (VR)* for simulation-based training, to *Big Data Analytics* that helps in making strategic HR-related decisions.

In the era of globalization and industrial revolution 5.0, technology has become an integral part in various aspects of life, including in the development of human resources (HR). Advances in information and communication technology enable organizations or institutions, both in the public and private sectors, to improve efficiency and effectiveness in managing and developing employee competencies. Technology not only helps in administrative activities, but also plays an important role in the provision of more innovative and measurable training, learning, and performance evaluation.

SMA Negeri 7 Kota Binjai is one of the educational institutions that has a mission including Creating Paten Students (Smart, Active, Taqwa, and Nominative) to realize a superior and independent quality school. In carrying out this mission, SMA N 7 Kota Binjai has adapted the use of technology in the teaching and learning process. SMA N 7 Kota Binjai believes that the adaptation process to utilize technology in the teaching-learning process can have a positive impact on improving the quality of human resources. The following is a table of the pre-survey assessment of the work behavior of teaching staff at SMA N 7 Binjai in 2023/2024

Table 1. Assessment of Work Development of Teaching Staff of SMA 7 Binjai

No	Type of Work Development	Description	Weight	Work Value	Score	Category
1	Teaching Development	Planning, implementing, and evaluating learning.	10	90	9,0	Very good
		Using technology as learning media.	10	80	8,0	Good
2	Educational Development	Setting an example in attitude and development.	10	90	9,0	Very Good
		Instilling moral values and building students' positive character.	10	90	9,0	Very good
3	Guiding Development	Provide academic support through tutoring.	10	85	8,5	Very good
		Assisting students in personal counseling and recognizing their potential.	10	80	8,0	Good
4	Innovative Development	Implementing new creative and innovative teaching methods.	10	80	8,0	Good

		Using technology in creating interactive learning content.	10	75	7,5	Fair
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From the table above, it can be seen that the use of technology as a learning medium at SMA N 7 Binjai is already in the good category, but innovative behavior in using technology to create interactive learning content is still in the sufficient category. Based on this phenomenon, an in-depth analysis of the types of technology used in human resource development is needed, along with the effectiveness and challenges faced in its implementation. The development of a nation requires two main assets or "power" called *resources*, namely *natural* resources and *human* resources. Both resources are very important in determining the success of a development. Speaking of human resources, it can be seen from two aspects, namely quantity and quality. Quantity concerns the number of human resources. Meanwhile, quality concerns the quality of human resources. Therefore, for the sake of accelerating development, improving the quality of human resources is the main requirement.

According to Soekidjo Notoatmodjo (2020), HR development includes various activities aimed at improving the knowledge, skills, and attitudes of individuals so that they can work optimally in achieving organizational goals. In a micro context, HR development includes training planning and human resource management at the organizational or institutional level. In addition, according to Sri Rahayu (2018), HR development in organizations is strongly influenced by effective leadership, an organizational culture that supports learning, and opportunities for career development. Sri Rahayu also emphasizes that technology plays a key role in accelerating HR development by facilitating access to training and learning that is relevant to work needs. Indicators or scope of micro HR development within an institution include two main interrelated activities.

According to Soekidjo Notoatmodjo (2020), the indicators in HR development are as follows:

1. Education

Increasing the level of formal and non-formal education of the community which has an impact on the quality of thinking, attitudes, and behavior.

2. Health

Good health status is the main requirement for human resources to work and develop optimally. Physical and mental health determine productivity.

3. Skills

The development of work skills, both through training and vocational education, is very important so that human resources can compete in the world of work.

4. Attitude and Work Ethic

Included in moral aspects, such as discipline, responsibility, and work motivation.

5. Productivity

Measured by work output per unit of time. Qualified human resources will have a high level of productivity.

Educational information technology refers to the use of technology in the learning process to improve the quality of teaching and learning. Technology in education at SMA Negeri 7 Binjai aims to speed up and simplify the teaching process, create more interactive learning, and increase the effectiveness of communication between teachers and students. According to Muslihudin and Oktavianto (2016), information technology is a set of tools consisting of hardware, software, databases, procedures, and humans as users, all of which interact with each other in producing useful information. IT aims to support the process of communication, decision-making, data processing, and information dissemination quickly and accurately.

Educational information technology includes various platforms and tools used in the teaching and learning process, such as Learning Management System (LMS), video conference

tools (such as Zoom and Google Meet), and other online learning platforms. By using this technology, SMA Negeri 7 Binjai can create a more modern, flexible and accessible learning environment for all students.

According to Muslihudin and Oktavianto (2016), some key indicators in the application of educational information technology include:

1. Hardware

Hardware used in learning includes computers, laptops, projectors, and other devices such as tablets and smartphones that facilitate access to learning materials.

2. Software

Software includes systems used to manage learning, such as Learning Management System (LMS), Google Classroom, and web-based learning applications. This software helps in organizing materials, assignments, and giving feedback to students.

3. Data

The data used in this context includes information about students, learning materials, evaluation results, and interactions between teachers and students. This data makes it easier to manage and monitor student progress.

4. Procedures

Procedures refer to the effective use of technology in learning. This includes the use of LMS for material sharing, assignment collection, as well as direct interaction between students and teachers using video conference platform.

5. Human (User)

In this case, people refer to teachers, students and administrative staff who use the technology to support the learning process and school administration.

Training is a vital component in the HR development process. According to Simamora (2004), training is a systematic process aimed at improving employees' work capabilities, while education plays a role in broadening long-term horizons and capacities. Hasibuan (2008) distinguishes education as a long-term intellectual endeavor, while training is practical for mastering work skills. Rivai (2014) added that training that is in accordance with the needs of the organization will be able to significantly improve competence, productivity and work efficiency. In the school context, training provided to educators, especially in the face of curriculum changes and technology integration, is a key factor in supporting educational success (Sudjana, 2010).

Training is a systematic process designed to improve the knowledge, skills, and attitudes of individuals in order to achieve certain work competencies. According to Rivai (2018), structured training can increase labor effectiveness and productivity through increased technical and non-technical abilities. The indicators are as follows:

1. Suitability of training materials to work needs.
2. Involvement of competent instructors.
3. Participant activeness in the training process.
4. Structured evaluation of training results.
5. Increased knowledge and skills after training.

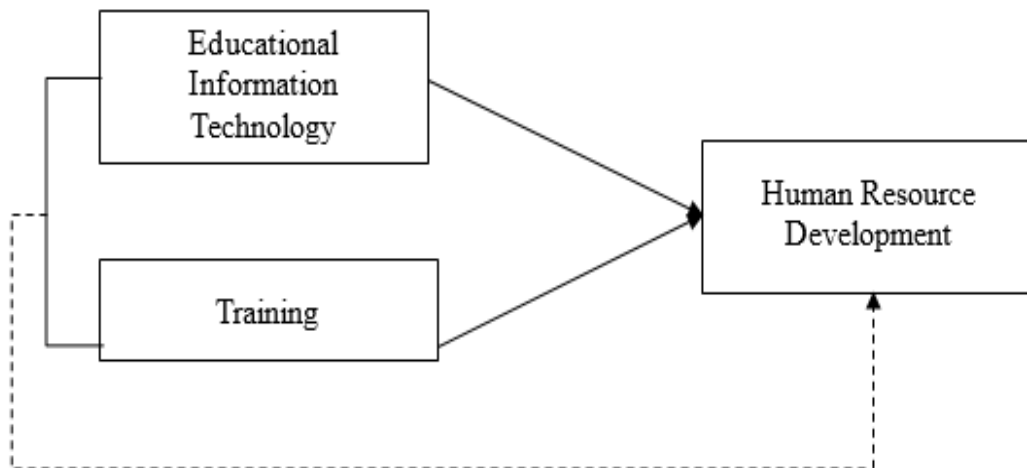
Methods

In this study, researchers conducted associative research using a quantitative approach. According to Sugiono (2013: 11) associative research is "research that aims to determine the effect or relationship between two or more variables". Quantitative research is a research method based on the philosophy of positivism, used to research on certain populations or samples, data collection using research instruments, quantitative or statistical data analysis, with the aim of testing predetermined hypotheses (Sugiyono, 2017: 8).

This research was conducted at this research was conducted at SMA Negeri 7 Binjai which is located at Jl. Sawi Kelurahan No.48, Paya Roba, Kec. Binjai Bar, Binjai City. The population

of educators and administrative staff at SMA N 7 Binjai amounted to 70 person people. Because the number is <100, the entire population will be sampled in the study.

Conceptual Framework



- 1) H1: It is suspected that Educational Information Technology has a positive and significant influence on Human Resource Development at SMA Negeri 7 Binjai.
- 2) H2: It is suspected that Training has a positive and significant influence on Human Resource Development at SMA Negeri 7 Binjai.
- 3) H3: It is suspected that Educational Information Technology and Training simultaneously have a positive and significant influence on Human Resource Development at SMA Negeri 7 Binjai.

Sources of data used in this study, namely:

a. Primary Data

Primary data is data obtained from respondents through questionnaires and also data from researcher interviews with sources. The data obtained from this primary data must be reprocessed.

b. Secondary Data

According to Kuncoro (2019: 148) "secondary data is data that has been collected by data collection agencies and published to the data user community". Secondary data can be in the form of evidence reports and records that have been arranged in archives that cannot be published and can be published.

Arikunto (2016: 24), explains that data collection techniques or instruments are tools selected and used by researchers in data collection activities so that their work becomes easier and gets better results. Data collection techniques using questionnaires and measured using a Likert scale. The data analysis in this study consists of several stages, namely: hypothesis testing which consists of: (partial t test, simultaneous f test, coefficient of determination and multiple linear regression analysis). Data processing in this study using the SPSS program

Results and Discussion

The results of the Education and Training Information Technology Test as an independent variable, then the Human Resource Development variable as the dependent variable as can be presented in the following table:

1. Validity Test

a. Validity of Educational Information Technology

Table 2. Validity of Educational Information Technology

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
VAR00001	112,6000	307,800	,545	,973
VAR00002	112,6000	307,800	,443	,973
VAR00003	112,4000	303,300	,671	,974
VAR00004	112,4000	303,300	,771	,974
VAR00005	112,4000	303,300	,635	,974
VAR00006	112,6000	298,800	,602	,975
VAR00007	112,4000	300,300	,698	,973
VAR00008	113,0000	296,000	,645	,973
VAR00009	112,6000	285,800	,767	,972
VAR00010	112,6000	307,800	,743	,973

b. Training Validity

Table 3. Training Validity

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
VAR00001	98,2400	508,357	,864	,983
VAR00002	98,2000	512,083	,851	,984
VAR00003	98,2000	508,500	,755	,983
VAR00004	98,3200	508,977	,767	,983
VAR00005	98,2000	512,000	,553	,984
VAR00006	98,4000	512,333	,553	,984
VAR00007	98,2800	513,043	,743	,984
VAR00008	98,2800	508,627	,766	,983
VAR00009	98,2000	515,250	,616	,984
VAR00010	97,9200	514,827	,627	,984

c. Validity of Human Resource Development

Table 3. Validity of Human Resource Development

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
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VAR00001	106,0000	1189,000	,723	,992
VAR00002	105,8000	1210,700	,747	,992
VAR00003	105,8000	1210,700	,547	,992
VAR00004	105,8000	1188,200	,548	,992
VAR00005	106,0000	1196,500	,428	,992
VAR00006	106,0000	1196,500	,441	,992
VAR00007	106,6000	1191,300	,657	,992
VAR00008	106,4000	1213,300	,617	,992
VAR00009	105,8000	1233,700	,524	,992
VAR00010	106,2000	1197,200	,541	,992

Based on the Validity Test table above, the SPSS *output* results show that all variables show a *Cronbach's Alpha* value of > 0.30 so it can be concluded that the questions that have been presented to respondents are valid.

2. Reliability Test

Table 4. Reliability

Variable	Cronbach's alpha	N of items
Educational Information Technology	0,979	10
Training	0,985	10
Human Resource Development	0,993	10

Based on the Reliability Test table above, the SPSS *output* results show that all variables show a *Cronbach's Alpha* value of > 0.60 so it can be concluded that the questions that have been presented to respondents are reliable or said to be reliable.

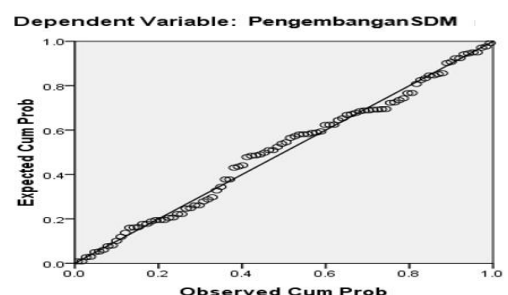
3. Classical Assumption Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		70
Normal Parameters ^{a,b}	Mean	0E-7
	Std. Deviation	1,67614553
	Absolute	,110
Most Extreme Differences	Positive	,109
	Negative	-,110
Kolmogorov-Smirnov Z		1,094
Asymp. Sig. (2-tailed)		,183

a. Test distribution is Normal.

b. Calculated from data.

Normal P-P Plot of Regression Standardized Residual



Based on the figures and diagrams above, then for the results of testing the normality of the data using the One-Sample Kolmogorov-Smirnov Test, it appears that the data is normally distributed, the *Asymp.Sig* value. (2-tailed) is 0.183, this means above the significant value of 0.05 or 5%. Then based on the PP Plot image, it can be seen that the data points spread around the diagonal line so that the data is normally distributed.

Table 5. Multicollinearity Test

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	3.195	1.536		2.079	.040		
Education Information Technology	.174	.159	.188	2.267	.018	.566	1.767
Training	.616	.171	.659	8.698	.000	.480	2.083

a. Dependent Variable: Human Resource Development

Based on the table above, it can be seen that all variables show a *Variance Inflation Factor* (VIF) number smaller than 10, so they are free from multicollinearity.

4. Multiple Linear Regression

Table 6. Multiple Linear Regression

Coefficients ^a			
	Unstandardized Coefficients	Std. Error	Standardized Coefficients
(Constant)	3.195	1.536	
Education Information Technology	.174	.159	.188
Training	.616	.171	.659

a. Dependent Variable: Human Resource Development

Based on the table, multiple linear regression is obtained as follows

$$Y = 3.195 + 0.174 X_1 + 0.616 X_2 + e.$$

The interpretation of the multiple linear regression equation is:

- If everything in the independent variables is considered zero then Human Resource Development (Y) is 3.195.
- If there is an increase in Educational Information Technology by 1 (one) unit, then Human Resource Development (Y) will increase by 0.174 or 17.4%.
- If there is an increase in Training by 1 (one) unit, then Human Resource Development (Y) will increase by 0.616 or 61.6%.

5. Partial Significance Test

Table 6. Partial Test

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	3.195	1.536		2.079	.040		
Education Information Technology	.174	.159	.188	2.267	.018	.566	1.767
Training	.616	.171	.659	8.698	.000	.480	2.083

a. Dependent Variable: Human Resource Development

From the table above, the following partial test results can be described as follows:

- Educational Information Technology partially has a positive and significant effect on Human Resource Development ($t_{\text{count}} > t_{\text{(table)}}$, $2.267 > 1.994$ at sig. $0.018 < 0.05$), so the research hypothesis H_1 is accepted.
- Training partially has a positive and significant effect on Human Resource Development ($t_{\text{count value}} > t_{\text{(table)}}$, $8.698 > 1.994$ at sig. $0.000 < 0.05$), so the research hypothesis H_2 is accepted.

6. Simultaneous Test

Table 7. Simultaneous Test

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1446.434	2	482.145	90.239	.000 ^a
	Residual	491.556	67	5.343		
	Total	1937.990	69			

a. Predictors: (Constant), Educational Information Technology, Training

b. Dependent Variable: Human Resource Development

Based on the above, it can be seen that the F_{count} value is 90.239 while the F_{table} is 3.99 which can be seen at $\alpha = 0.05$ (see attachment F table). The significant probability is much smaller than 0.05, namely $0.000 < 0.05$, so the regression model can be said that simultaneously in this study Education and Training Information Technology has a significant effect on Human Resource Development. Then the previous hypothesis is Accept H_a or the hypothesis is accepted.

7. Test Coefficient of Determination

Table 8. Coefficient of Determination

Model	R	R Square	Adjusted Square	Std. Error of the Estimate
1	.864 ^a	.746	.738	2.311

a. Predictors: (Constant), Educational Information Technology, Training

b. Dependent Variable: Human Resource Development

Based on the table above, it can be seen that the *adjusted R Square* number is 0.738, which can be called the coefficient of determination, which in this case means that 73.8% of Human Resource Development can be obtained and explained by Educational Information Technology, Training. While the remaining $100\% - 73.8\% = 26.2\%$ is explained by other factors or variables outside the model, Leadership, Organizational Culture, and others.

Discussion

The results of data analysis of Educational Information Technology partially have a positive and significant effect on Human Resource Development ($t_{\text{count}} > t_{\text{(table)}}$, $2.267 > 1.994$ at sig. $0.018 < 0.05$), so that the research hypothesis H_1 is accepted, then H_a is accepted and H_o is rejected. This shows that SMA Negeri 7 Binjai must make improvements in the utilization of educational information technology will be followed by an increase in HR development. This means that information technology is one of the important factors that can encourage the improvement of HR competencies, knowledge, and skills. In accordance with Sedarmayati (2017) in his book on Human Resource Development emphasizes that the use of information technology in education can improve the learning process, access to information, and training efficiency. This has a positive impact on improving HR capabilities and competencies. Also supported by research by Nasution (2018) also found similar results that the integration of information technology in education increases learning motivation and learning outcomes, which are important components in HR development. Data results Training partially has a positive and significant effect on Human Resource Development ($t_{\text{count}} > t_{\text{(table)}}$ value, $8.698 > 1.994$ at sig. $0.000 < 0.05$), so the research hypothesis H_2 is accepted. This shows that training directly contributes to improving HR competencies, abilities, and performance. SMA Negeri 7 Binjai is expected to provide training to teachers and employees consistently to ensure that existing human resources are ready to face the changes in skills needed. This is supported by Mathis and Jackson (2011) in their book "Human Resource Management" which states that training plays an important role in improving employee performance and preparing human resources who are ready to face changes in technology and the job market. Also supported by research by Nasution (2018) which confirms that continuous training allows employees to develop adaptive abilities that are in accordance with changes in the work environment and technology.

The data results can be seen that the F_{count} value is 90.239 while the F_{table} is 3.99 which can be seen at $\alpha = 0.05$. The significant probability is much smaller than 0.05, namely $0.000 < 0.05$, so the regression model can be said that simultaneously in this study Education and Training Information Technology has a significant effect on Human Resource Development. Then the previous hypothesis is Accept H_a or the hypothesis is accepted. This shows that if the two independent variables are integrated, they together make a real and significant contribution to the development of human resource quality at SMA Negeri 7 Binjai. Educational Information Technology variables will provide easy access, extensive learning resources, and more effective and efficient learning methods. This accelerates the transfer of knowledge and skills that are needed by human resources in order to adapt to rapid changes in the work environment. While the Training variable will be a means of increasing technical competence and soft skills, and improving employee performance through practical and structured learning. This is in accordance with research conducted by Mathis and Jackson (2011), confirming that the two main aspects of HR management are training to improve capabilities and information technology as a medium that facilitates access to learning and rapid and broad knowledge transfer.

Conclusions and Suggestions

The following conclusions can be presented from the research conducted as follows:

- a. Educational Information Technology partially has a positive and significant effect on Human Resource Development at SMA Negeri 7 Binjai ($t_{\text{count}} > t_{\text{table}}$ value, $2.267 > 1.994$ at sig. $0,018 < 0,05$).
- b. Training partially has a positive and significant effect on Human Resource Development at SMA Negeri 7 Binjai ($t_{\text{count}} > t_{\text{table}}$, $8.698 > 1.994$ at sig. $0,000 < 0,05$).
- c. Education and Training Information Technology simultaneously has a positive and significant influence on Human Resource Development at SMA Negeri 7 Binjai, with an F count value of $90.239 > F_{\text{table}}$ of 3.99 at sig. $0,000 < 0,05$

The suggestions that can be conveyed, namely:

- a. SMA Negeri 7 Binjai is advised to encourage teachers to adapt IT-based learning methods to make the learning process more effective and interesting. Increase the use of various educational technology devices and platforms, such as *Learning Management Systems* (LMS), access to digital learning resources, and interactive learning applications. In addition, schools are expected to facilitate the installation of IT infrastructure such as fast and stable internet access, adequate hardware (computers, projectors, tablets), and relevant supporting software for learning.
- b. SMA Negeri 7 Binjai is advised to carry out relevant and sustainable training for teachers and education personnel with a focus on improving technical, pedagogical and managerial competencies. Furthermore, conduct post-training evaluations to monitor the effectiveness, impact and need for further training.
- c. SMA Negeri 7 Binjai is expected to facilitate and utilize information technology-based training platforms (online training, webinars, video tutorials) so that training can be accessed flexibly, effectively, and reach more participants. Furthermore, encourage the use of technology in training for interactive learning and relevant practical case studies.

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