The Effect of Human Resource Management Practices in Implementation of Industry 4.0 on Employee Performance: Case Study in a Company in Batam City

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Keywords: Human Resource Management Practices, Training and Development, Compensation, Job Security, Promotion, Industry 4.0 and Employee Performance.

Abstract: This study aims to examine the effect of human resource management practices in the form of training and development, compensation, job security, and promotion to employee performance. The data collection technique used is a survey with questionnaire. The sampling method used is purposive sampling techniques. The samples used in this study were 280 employees of the production operator and office staff in one of the companies in Batam City. The data processing techniques used is SPSS software version 26.0. The analytical tool used is simple linear regression. The results show that training and development, job security, and promotion are influential in employee performance, while compensation has negative effect and is insignificant on employee performance.

1 INTRODUCTION

Batam is one area that has implemented industrial system 4.0, which has several industrial areas and is an example in technological development. One of the electronics industry sectors in Batam that has applied the industrial system 4.0 is PT XYZ Batam. PT XYZ Batam is an example for other companies in the application of industrial system 4.0. This can be seen from the success of PT XYZ Batam in conducting digital transformation so that it is able to adopt and implement new operational systems that are more efficient.[1]

The emergence of the industrial revolution 4.0 is intended to replace the work done by humans. However, to maximize the application of industry 4.0, companies also need to employ high-quality employees. Employees must be able to collaborate with new technologies, namely robots, because all work carried out by the technology is still monitored by employees. A successful collaboration between employees and robots is one of the keys so the application of industry 4.0 is running efficiently[2].

Performance is an achievement in carrying out tasks based on skill, experience, and timeliness. Employees can be said to be one of the valuable assets in a company so that employees who have low academic and soft skills will be easily replaced by the industrial system 4.0. Requirements for employees' knowledge and skills in this case can change and become more specialized (Dworschak & Zaiser, 2014).

This research is important to answer whether human resource management practices significantly influence employee performance. Based on this background, researchers are interested in conducting research by raising the title "The Effect of Human Resource Management Practices in Implementation of Industry 4.0 on Employee".

2 LITERATURE REVIEW AND HYPOTHESIS

2.1 Theory

2.1.1 Social Exchange Theory

The theory of social exchange was put forward by several figures namely psychologists John Thibaut and Harlod Kelley (1959), sociologists George Homans (1961), Richard Emerson (1962), and Peter

Blau (1964). The theory is a social science that proposes about social relationships that have an element of rewards, sacrifice, and profit. Social exchange theory in general analyzes the work behavior of employees in a company. The theory of social exchange will produce a reward from social relations with others. These benefits can be obtained by the sacrifice that has been issued, the higher the sacrifice incurred, the higher the benefits obtained, and the benefits received must also be proportional to the investment made. Social exchange theory will implement that an employee will be treated well by the company so that the employee will have a good commitment to work.

2.1.2 Motivation Theory

Motivation theory was put forward by Abraham Maslow (1943). Motivation theory suggests that humans have levels in meeting the needs of life. Humans will continue to strive to meet their needs. This theory divides the 5 needs of human life based on a hierarchy of needs, namely arranged based on the most basic needs to the highest needs. The first hierarchy of needs includes the most basic needs in sustaining life in the form of food, drink, shelter, and other physical needs. Second, the need for security and safety, namely the need for security against various threats. Third, social needs, namely the need for love, family, and friends. Fourth, the need for appreciation is the need for a sense of wanting to be appreciated by others. Fifth, the need for self-actualization is the need to meet self-ambition.

2.2 Literature Review

The research of Abdullah, Ahsan, & Alam (2009) regarding human resources management practices on employee performance researched in Malaysia. The results of the study indicate that there is a positive influence between human resources practices on company performance. The measurement of human resources practices in the study consisted of training and development, teamwork, compensation, human resources planning, performance appraisal, and employee safety. In this study, compensation and job security do not have a relationship to company performance.

In contrast to the research of Ilyas, Farooqi, & Ahmad (2016) in the private companies Rawalpindi and Islamabad, the results of the study showed that human resources management practices, compensation, the effect of performance evaluation,

and employee training had a positive effect on employee performance.

Research conducted by Taib, Hj Salaudin, & Hanafi (2019) aims to examine the effect of HR management practices on employee performance and mediate the role of employee involvement. The study used a sample of 318 employees using stratified sampling techniques. The study uses social exchange theory as a guideline in examining and understanding the relationship between HR practices, employee performance, and employee involvement. The results of this study indicate that HRM practices in the form of training and development, compensation, job security, and promotion have significant results on employee performance. In addition, employee involvement can also mediate the relationship between HR practices and employee performance.

2.3 Hypothesis

2.3.1 Training and Development Have a Significant Impact on Employee Performance

Industry era 4.0 requires companies to design training and development programs that can improve employee performance. Companies can provide various types of training to employees to enable them to do multitasking work. Training can be interpreted as an effort to reduce the gap between the ability of employees with the abilities desired by the company. Training can be done by increasing the knowledge and skills possessed by employees. With this training, employees are expected to be able to fulfill the abilities desired by the company.

The results of research on human resource management practices in the form of training and development have a significant effect on employee performance (Taib, Hj Salaudin, & Hanafi, 2019; Abdullah, Ahsan, & Alam, 2009; Elnaga & Imran 2013; Theng, Said, & Wandary, 2013). Based on the theory and previous research, the first hypothesis can be formulated as follows:

H1: Training and development have a significant effect on employee performance.

2.3.2 Compensation Has a Significant Impact on Employee Performance

Compensation can be interpreted as all income received by employees in return for services provided to a company. Compensation is also used by company management in increasing employee morale,

motivation, achievement, and job satisfaction. Employees will continue to innovate to the company if the employee gets compensation according to the contribution he does to the company.

The results of research on human resource management practices in the form of compensation have a significant effect on employee performance (Taib, Hj Salaudin, & Hanafi, 2019). Other studies suggest that compensation has no significant effect on business performance (Abdullah, Ahsan, & Nature, 2009). Based on the previous description, the hypothesis can be formulated as follows:

H2: Compensation has a significant effect on employee performance.

2.3.3 Job Security Has a Significant Impact on Employee Performance

Job security is an activity that is related to the activities carried out by employees in the company. Job security is important in the company to protect and prevent employees from things that are not desirable. Employees will feel safe and work in peace if job security in the company is well implemented.

The results of research on human resource management practices in the form of job security significantly influence employee performance (Taib, Hj Salaudin, & Hanafi, 2019). Other studies suggest that job security has no significant effect on business performance (Abdullah, Ahsan, & nature, 2009). Based on the previous description, the hypothesis can be formulated as follows:

H3: Job security has a significant effect on employee performance

2.3.4 Promotion Has a Significant Impact on Employee Performance

Promotion can be interpreted as one of the practices of human resource management in the company. Employees who have good achievements will experience a move from one position to another higher position, so that the income received is also greater than before. Promotion is carried out so that employees have high morale.

The results of research on human resource management practices in the form of promotion significantly influence employee performance (Taib, Hj Salaudin, & Hanafi, 2019). Based on the previous description, the hypothesis can be formulated as follows:

H4: Promotion has a significant effect on employee performance.

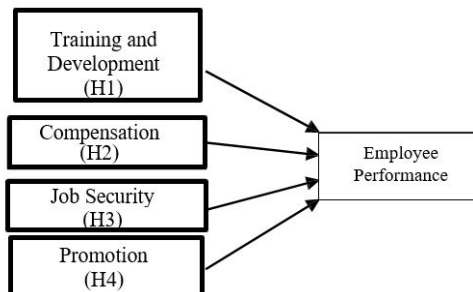Based on previous theoretical and research studies, the following framework is obtained:

Figure 1: Research Model
Source: Processed Data

3 METHOD

The research method used in this study is a quantitative approach to testing hypotheses. Sample in this research are employees from PT XYZ. The Number of samples in this study use the Slovin formula with an error level of 5%. From the calculation results, a minimum sample size of 268.2043 was obtained. For that, the minimum sample is 270 respondents.

Table 1: Number of employees of PT XYZ Batam.

Employees	Total
Production Operator	767
Office Staff	47
Total	814

Source: PT XYZ Batam

HRD Sampling in this study uses purposive sampling with the criteria of permanent employees and contract PT XYZ parts of the productionoperator, and office staff. The questionnaire in this study consisted of two parts. The first part is the general data of respondents. The second part is the contents of the questionnaire which contained 14 question items about training and development, 12 question items about compensation, 11question items about job security, 12 question items about promotion, 15 question items about employee performance. In accordance with the research variables, the source of the contents of the questionnaire was adapted from (Taib, Hj salaudin, & Hanafi, 2019).

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3.1 Independent Variable

The independent variable in this study is the practice of human resource management. Human resource management practices are the most important thing for a company that is used to obtain quality and productive human resources. The indicators for measuring human resource management practices in this study consist of training and development (X1), compensation (X2), job security (X3) and promotion (X4).

3.1.1 Training and Development

Training and development are indispensable when companies change their industrial systems. Training is a systematic process provided by companies that can change employee behavior in achieving company goals (Rivai & Sagala, 2009). Development is one of the programs provided by the company to improve employee skills in carrying out tasks and obligations in the future (Rivai & Sagala, 2009). Training and development provide many benefits to employees and the company. Benefits in the form of expertise and employee skills are valuable assets for the company, in addition to that, with training and development, the capabilities of employees will increase.

The training and development variables in this study were measured using 14 statement items adapted from Taib, Hj Salaudin & Hanafi (2019), as for the assessment indicators for these training and development variables in the form of goals, objectives, instructors, materials, methods, and training participants.

3.1.2 Compensation

Compensation is the most important thing for employees because compensation reflects a measure of the value that the employee receives for what he has given the company. Compensation can be interpreted as a form of appreciation for services performed by employees for the company. The compensation provided by the company can be in the form of financial, goods, services, and services so that employees feel valued at work so that employees will have high loyalty and commitment to the company (Hartatik, 2014).

The compensation variable in this study was measured using 12 statement items adapted from Taib, Hj Salaudin & Hanafi (2019). The indicators of assessment of this compensation variable are in the form of satisfaction with salaries, incentives, allowances, and facilities provided by the company.

3.1.3 Job Security

Job security is a condition in which employees feel safe and avoid danger while doing work (Hartatik, 2014). Job security is the physical and mental condition of employees caused by the work environment in the company (Rivai & Sagala, 2009). An effective work security system within the company will reduce the occurrence of work injuries or accidents. In addition, the effective implementation of Kejra security can also increase employee productivity in achieving the desired goals of the company. The job safety variable in this study was measured using 11 statement items adapted from Taib, Hj Salaudin & Hanafi (2019). The indicators for assessing this variable of job security are physical and social work environments.

3.1.4 Promotions

Promotion occurs when an employee with good performance can be moved from one job to a higher job, higher salary, and responsibility (Rivai & Sagala, 2009). Promotion in general is evidence of recognition of work performance achieved by employees. Promotion has an important meaning for the company, because with the promotion of company stability and employee morale is more secure. In addition, promotion is one way for employees to improve their careers. Therefore, employees will work with motivation and enthusiasm Promotion variables in this study were measured using 12 statement items adapted from Taib, Hj Salaudin & Hanafi (2019). The indicators of assessment of this promotional variable are job performance, discipline, honesty, cooperation, skills, loyalty, leadership, education, length of work and management. Promotion occurs when an employee with good performance can be moved from one job to a higher job, higher salary, and responsibility (Rivai & Sagala, 2009). Promotion in general is evidence of recognition of work performance achieved by employees. Promotion has an important meaning for the company, because with the promotion of company stability and employee morale is more secure. In addition, promotion is one way for employees to improve their careers. Therefore, employees will work with motivation and enthusiasm.

Promotion variables in this study were measured using 12 statement items adapted from Taib, Hj Salaudin & Hanafi (2019). The indicators of assessment of this promotional variable are job performance, discipline, honesty, cooperation, skills,

loyalty, leadership, education, length of work and management.

3.2 Dependent Variable

3.2.1 Employee Performance

Employee performance namely the achievement of a person in carrying out a given task both in quality and quantity. Employee performance variables in this study were measured using 15 statement items adapted from Taib, Hj Salaudin & Hanafi (2019). The indicators for assessing this variable are quality, quantity, attendance, timeliness, and cooperation ability.

4 RESULT AND DISCUSSION

4.1 Characteristics of Respondents

Respondents in this study were employees of PT XYZ Batam. The characteristics of the data used in this study can be seen through the elaboration in table 2.

Table 2: Data Characteristics.

Explanation	Total
Questionnaire were distributed	290
Questionnaire that did not return	3
The questionnaire does not comply with the requirements	7
Returned questionnaire	280
Questionnaire that can be processed	280

Source: Processed Data

Data obtained from respondents were then adjusted based on position, gender, age, marital status, last education, and years of service. General characteristics of respondents can be seen through the elaboration in table 3.

Table 3: Characteristics of Respondents.

Respondent Criteria		Frequency	Percentage
Position	Office Staff	94	33,6%
	Production Operator	186	66,4%
Gender	Male	70	25,0%
	Female	210	75,0%
Age	< 20 year	49	17,5%
	21- 30 year	186	66,4%
	31 – 40 year	28	10,0%
	41 – 50 year	17	6,1%
Marital status	Married	46	16,4%
	Single	234	83,6%
	< SMA/Equal	92	32,9%

Education Level	SMA	103	36,8%
	D2	1	0,4%
	D3	30	10,7%
	D4	7	2,5%
	S1	45	16,1%
	S2	2	0,7%
Years of service	< 2 year	139	49,6%
	2 - 5 year	106	37,9%
	6 – 10 year	15	5,4%
	10 – 15 year	13	4,6%
	16 – 20 year	2	0,7%
	>20 year	5	1,8%
Total of Samples		280	100%

Source: Processed Data

4.2 Instrument Testing

4.2.1 Validity Test

The validity test in this study uses the Pearson Correlation method. Question items to be valid if r count > r table, with the number n = 200 respondents, then obtained degree of freedom (df) =198 and r table = 0.1388 at alpha = 0.05. So that the item is said to be valid if r count > 0.1388. The question items in this study represent variables of training and development, compensation, job security, promotions, and emloyee performance as valid with a value of r count > 0.1388.

4.2.2 Reliability Test

The reliability tests were performed using Alpha Cronbach's. The question items that represent the variables in this research are stated to be exceptionally reliable based on the value of Cronbach Alpha > 0.7. The result displayed in table 4.

Table 4: Test Reliability Questionnaire.

Variable	Cronbach Alpha	Cronbach Alpha	Conclusion
X1	0,754	0,70	Reliable
X2	0,758	0,70	Reliable
X3	0,752	0,70	Reliable
X4	0,754	0,70	Reliable
Y	0,728	0,70	Reliable

4.3 Classical Assumption Test

4.3.1 Normality Test

The normality test in this study was carried out by using the one sample Kolmogoroc-Smirnov test in SPSS version 26. The results of the normality test in

this study can be seen through the explanation in table 5:

Table 5: Normality Test.

	Unstandardized Residual
Kolmogorov - Smirnov	0.050
Asymp.sig: (2 tailed)	0.200

Source: Processed Data

4.3.2 Heteroscedasticity Test

Heteroscedasticity test results in this study can be seen through the translation in table 6:

Table 6: Heteroscedasticity Test

Variable	T	Sig.
X1	1.420	.157
X2	0.105	.917
X3	1.323	.187
X4	-1.403	.162

Source: Processed Data

4.4 Hypothesis Test

4.4.1 Simple Linear Regression Testing Results

Hypothesis testing in this study uses two- tailed testing, namely by looking at the influence of the significance of the independent variables on the dependent variable. The guideline used is that if the significance probability < 0.05 then H0 is rejected and Ha is accepted, or the independent variable has a significant effect on the dependent variable. The results of testing the first hypothesis using simple linear regression in this study can be seen through the translation in table 7:

Table 7: Results of the Simple Linear Regression Hypothesis 1

	Unstandardized		T	Sig.
	B	Std. Error		
(Constant)	28,378	2,948	9,626	0,000
Training & Development	0,521	0,049	10,564	0,000

Based on table 7 above, the obtained equation for this study is:

$$KK = 28{,}378 + 0{,}521PP + e$$

Based on table 7, the regression coefficient value is the training and development variable on employee performance of 0.521 or equal to 52.1% means that if the training and development variable has increased by one unit, the employee's performance will increase by 52.1%. Tcount value of 10,564 with a significance of 0,000, which means that the significance value of t is smaller than 0.05 which is $0{,}000 < 0.05$. It can be concluded that the training and development variable (X1) has a significant effect on employee performance (Y), so that **H1 is supported.**

The results of testing the second hypothesis using simple linear regression in this study can be seen through the translation in table 8:

Table 8: Results of the Simple Linear Regression Hypothesis 2.

	Unstandardized Coefficients		T	Sig.
	B	Std. Error		
(Constant)	61,942	2,405	25,759	0,000
Compensation	-0,054	0,050	-1,078	0,282

Source: Processed Data

Based on table 8 above, the obtained equation for this study is:

$$KK = 61{,}942 - 0{,}054KOMP + e$$

Based on table 8 and the equation above, it can be concluded that the second hypothesis namely compensation has a significant effect on employee performance. From these results, it is known that a positive constant value of 61,942 indicates the value of employee performance before being influenced by the independent variable, namely compensation. In this case, if the compensation is constant, the average level of employee performance is 61,942.

The value of the regression coefficient is the compensation variable on employee performance of -0.054 or equal to -5.4% which means that if the compensation variable has increased by one unit the employee's performance will decrease by -5.4%. Tcount value of -1.078 with a significance of 0.282 means that the significance value of t is greater than 0.05, which is $0.282 < 0.05$. Therefore, it can be concluded that the compensation variable (X2) in the regression model is negative and has no significant effect on employee performance (Y), so **H2 is not supported**.

The results of testing the third hypothesis using simple linear regression in this study can be seen through the translation in table 9:

Table 9: Results of the Simple Linear Regression Hypothesis 3.

	Unstandardized Coefficiens		T	Sig.
	B	Std. Error		
(Constant)	35,124	2,549	13,778	0,000
Job Security	0,541	0,057	9,575	0,000

Source: Processed Data

Based on table 9 above, the obtained equation for this study is:

KK = 35,124 + 0,541KMNK +e

Based on table 9 and the equation above, it can be concluded that the third hypothesis namely job security has a significant effect on employee performance. From these results, it is known that a positive constant value of 35.124 indicates the value of employee performance before being influenced by the independent variable, namely job security. In this case, if job security is constant, the average level of employee performance is 35,124.

The regression coefficient value is the variable of job security on employee performance of 0.541 or equal to 54.1%, which means that if the work safety variable has increased by one unit, the employee's performance will increase by 54.1%. T value of 9.575 with a significance of 0.000 means that the significance value of t is less than 0.05, which is 0.000 <0.05. Then, it can be concluded that the work safety variable (X3) has a significant effect on employee performance (Y), so that **H3 is supported.** The results of testing the fourth hypothesis using simple linear regression in this study can be seen through the translation in table 10:

Table 10: Results of the Simple Linear Regression Hypothesis 4.

	Unstandardized Coefficients		T	Sig.
	B	Std. Error		
(Constant)	35,126	1,848	19,005	0,000
Promotion	0,508	0,038	13,254	0,000

Source: Processed Data

Based on table 10 above, the obtained equation for this study is:

KK = 35,126 + 0,508PRMS +e

Based on table 10 and the equation above, it can be concluded that the fourth hypothesis namely promotion has a significant effect on employee performance. From these results, it is known that a positive constant value of 35.126 indicates the value of employee performance before being influenced by the independent variable, namely promotion. In this case, if the promotion is constant, the average level of employee performance is 35,126.

The regression coefficient value is the promotion variable on employee performance of 0.508 or equal to 50.8%, which means that if the promotion variable has increased by one unit, the employee's performance will increase by 50.8%. Tcount value of 13.254 with a significance of 0.000 means that the significance value of t is less than 0.05, 0.000 <0.05. It can be concluded that the promotion variable (X4) has a significant effect on employee performance (Y), so that **H4 is supported.**

4.5 Data Analysis

Based on statistical tests that have been carried out on all four hypotheses using SPSS software version 26.0, the results obtained are that all three hypotheses are accepted and one hypothesis is not accepted. The following table summarizes the results of a simple linear regression statistical test in this study:

Table 11: Summary of Hypothesis Test Results.

	Hypothesis	T	Sig.	Results
H1	Training and Development Has a Significant Impact on Employee Performance	10,564	0,000	Supported
H2	Compensation has a Significant Effect on Employee Performance	-1,078	0,282	Not Supported
H3	Job Security Has a Significant Effect on Employee Performance	9,575	0,000	Supported
H4	Promotion has a Significant Effect on Employee Performance	13,254	0,000	Supported

Source: Processed Data

5   CONCLUSIONS

The main objective of this study is to examine whether there is an influence of human resource management practices in the application of industry 4.0 with training and development variables, compensation, job security, and promotion of employee performance. This study also found that training and development, job security, and promotion has affects employee performance. While compensation has no affects employee performance.

Implication of the current research to provide information and input to PT XYZ in maintaining its success so that it can meet the demands of today's industrial development. In addition, this research to provide information is expected for companies, especially management in making policies and strategies in running their business as well as as input and consideration for other companies that want to implement the industrial system 4.0.

Future research could replicate and extend this study by adding other variables and samples from different industries to offer a better understanding. And the next research should add to other influences that can affect employee performance with human resource management practices.

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