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Effect of Age, Length of Service, and Education on Employee Productivity

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ABSTRACT

This study aims to examine the effect of age, tenure, and education on employee productivity, either partially or simultaneously. Direct testing and questionnaire distribution obtained a population of 48 people, followed by statistical correlation tests and simple regression. The partial hypothesis test obtained the value of Age (X1) tcount < t table or 0.996 < 1.201063 and significant obtained 0.325 < 0.05, Working Period (X2) obtained tcount value > ttable or 1.539 > 1.201063 and the relevant value obtained was 0.131 < 0.05 and Education (X3), the value of tcount < t table or 0.573 < 1.201063 and the relevant value obtained 0.570 < 0.05 on employee productivity (Y). After conducting the test, it was concluded that partially Age, Term of Service, and Education had a positive and relevant impact on the productivity of PT Jasa Raharja's Medan City employees. Overall Age, Working Period, and Education have a very positive and significant impact on the productivity of employees of PT Jasa Raharja Medan

Introduction

The company has branches in all provinces in Indonesia. employees PT Jasa Raharja is a company The most important part of this company because it is the axis that determines the achievement of company goals. This company focuses on the field of social insurance, especially in the section of road traffic accidents by referring to U U No. 33 and 34 of 1964. According to Aprilyanti (201 7), "In the productive age, usually a worker will have a better productivity value when compared to workers who have passed the productive age because they tend to have a weaker and limited body".

According to Handoko (2015), "The working period can also be our reference in seeing the extent to which workers can achieve maximum results by the skills they have ". According to Meliza (2014:20), "Education factor is taller will have ability more intellectual good ". According to Sulaiman (2016), "This productivity factor plays an important role because the higher the productivity produced by workers, the productivity of the company is also expected to increase ". After seeing live problem company background, the author is interested in discussing related research with Productivity Employees and taking title research writing.

Literature Review

Age

According to Robbins (2013:156), "During the age of products, the more old workers, the more tall score productivity power work. "According to Shields (2012:40), "Theoretical basis "variable about influence age to productivity intermediary ". Psychology, Social Psychology, Economics. According to Hasanah and Widowati (2011:2112), "A muscular physique reflects a young age so that it can produce higher output. So it can be concluded that age greatly affects the physical ability of workers ".

Working Hours

According to Oktaviani (20 09), "The length of time an employee has contributed to a company and the extent to which his ability to work well ". According to Demerouti (2012), "The working period is

influenced by several factors: demands Work, Resources Power Job, Resources Power Personal, Personality. According to Ukkas (2017:19), "The length of a person's working period greatly affects the speed and skills in doing the job "

Education

According to Heindjrachman (2013:228), "Education is activities that enhance knowledge general someone who is a concerned activity in reach something purpose: According to Tirtahardja (2011:53), "Several indicators on the education variable ". Among them: Level of Education, Analogies A affair, Skills. According to Handoko (2015:78), "Education is an important part of work productivity because it makes it easier for workers to learn new things in the world of work ".

Productivity Employee

According to Umar (2017:25), "Productivity can be translated as a mental attitude that scores life on the day this exceeds from yesterday as well as day tomorrow Required to exceed well rather than a day this ". According to Simamora in Saputra (2014), "The productivity of performance can be measured from several factors ". Among them: Capacity in work, quality in work, and the right time.

Method

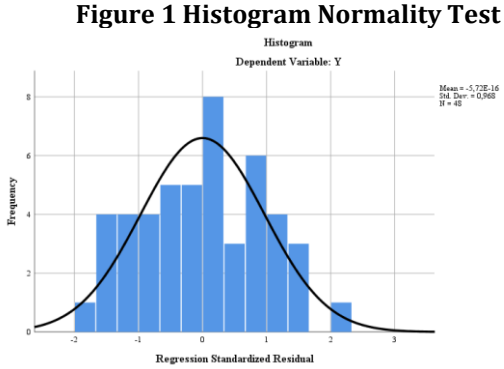
Researchers make observations directly at the office of PT Jasa Raharja Medan City which is having its address at Jalan Iskandar Muda No.20EE, Darat, Medan Baru District, Medan City. Research conducted starts from March until August 2021. The researcher Uses an approach causal associative with a method quantitative. According to Sugyono (2016:55): "Method associative this is studies using method statistics or quantitative, because study this systemized, structured as well as planned. The population in research is 48 employees who work at PT Jasa Raharja, Medan City. Silaen (2018:87) states, "Population that is gathering object nor individual character as ingredient research. The research model used this relation with goals and hypotheses study is Analysis Multiple Linear Regression. Sanusi (2011:134-135) argues, "Analysis regression multiple by significant improve the simple linear regression model, it means could increase total variable the previous explanation only have one, two, or more variable explanation. "

Results and Discussion

Normality test

The writer gets two-step in the determination of normally distributed residual n or no yes now: one of the standard residues, the easiest to check, is to look at the test graph for normal production of the observed path. Normality can be seen in the test graph:

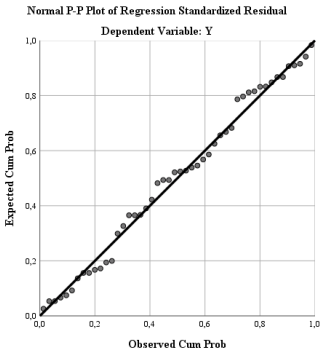
Figure 1 Histogram Normality Test



Source: SPSS data, 2021 (processed data)

Figure 1 states normally distributed because tilt curve leaning draw as well as like bells. The conclusion is the data could say reasonable.

PP Plot Normality Test



Source: SPSS data, 2021 (processed data)

Figure 2 Normality Graph PP Plot spreads around the diagonal, this shows the normal distribution of the data.

Multicollinearity Test

Multicollinearity can also be seen through the tolerance value and *Variance Inflation Factor* (VIF). Here are the results of the test:

Table 1: Multilinearity Test

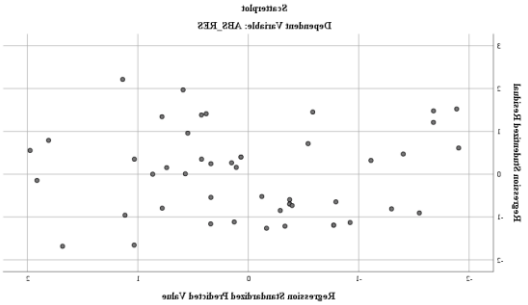
Model		Unstandardized Coefficients		Standardized Coefficients	Collinearity Statistics			
		B	Std. Error	Beta	Partial	Part	Tolerance	VIF
1	(Constant)	1,863	,456					
	Age	,346	,152	,346	,325	,307	,787	1,270
	Years of service	,139	,125	,183	,165	,150	,675	1,482
	Education	-,005	,108	-,008	-,007	-,006	,678	1,476

Table 1 states that there is no problem with the multicollinearity test. From the results, it can be seen the tolerance value in the variable Age 0.787 > 0.10 and VIF value 1.270 < 10. In Variable Working Period score tolerance 0.675 > 0.10 and VIF value 1.482 < 10. in the variable Education value tolerance 0.678 > 0.10 and VIF value 1.476 < 10. In conclusion, is said to be normal as well no occur multicollinearity.

Heteroscedasticity Test

This type of test is useful to see if a regression has a variance similar to the residual between observations with other observations. If one of the variances of the residuals is constant, then homoscedasticity occurs, if the variances have different values it is called heteroscedasticity.

Table 3: Scatterplot Graph



Source: SPSS data, 2021 (processed data)

From scatterplot graph it can be seen that dots spread with a pattern that is not clear, is either above or below the number zero (0) on the Y-axis, does not gather in one places, so scatterplot graph it can be concluded that does not occur heteroscedasticities in regression model. The presence or absence of heteroscedasticities can be seen from probability the significance, if the significance value is above the level of 5% confidence, then it can be concluded that 0 does contain heteroscedasticity.

Table 2: Glacier Test

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	,143	,256		,560	,578
	Age	,085	,085	,164	,996	,325
	Years of service	-,108	0.070	-,274	-1.539	,131
	Education	0.035	,061	,102	,573	,570

a. Dependent Variable: ABS_RES

Source: SPSS data, 2021 (processed data)

As seen in table 2, it is explained that in the variable above, if the age variable obtains a value that shows 0.325 > 0.05, then Variable Working Period gets a score which is significant 0.131 > 0.05, and in education, it obtains a score significant 0.570 > 0.05. Concluded glacier test does not occur problem heteroscedasticity.

Results of Research Data Analysis

Research Model

Hypothesis test conducted with analysis multiple linear regression. The regression model used among others:

Table 2: Results of Multiple Linear Regression Analysis

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	1,863	,456		4.085	,000
	Age	,346	,152	,346	2,278	,028
	Years of service	,139	,125	,183	1,113	,272
	Education	,005	,108	-,008	-,048	,962

a. Dependent Variable: Productivity

Source: SPSS data, 2021 (processed data)

Productivity = 1.863 + 0.346 $^{(X1)}$ + 0.139 Media $^{(X2)}$ + 0.658 Training (X3)

As for interpretation based on regression test the namely:

1. constant worth 1,863 which means if variable age, years of service, and education no there are so variable bound productivity 1,863 units.
2. Coefficient regression variable age is 0.346 which is worth positive, can be concluded that every enhancement variable el on age unit could increase variable productivity s amounted to 0.346.
3. Coefficient regression variable period of service y is several 0.139 which is a number positive, assuming other variables are constant, can be concluded that each increase in working period will increase the variables related to productivity by 0.139.
4. Coefficient regression variable education is 0.005 yang is a number positive, it can be concluded that every variable increase education will improve variables related to the productivity of 0.005.

Coefficient of Determination

Following this is results testing coefficient determination:

Table 3: Coefficient Determination

Model Summary [b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R Square Change	F Change	df1	df2	Sig. F Change	
1	,448 [a]	,201	,146	,22387	,201	3,681	3	44	0.019	2,131

a. Predictors: (Constant), Education, Age, Years of Service

b. Dependent Variable: Productivity

Source: SPSS data, 2021 (processed data)

Table 3 coefficients determination gives R - Square value of 0.146 p this means 14.6% of variation variable performance employees who can clarify by variation variable age, years of service, and 139education whereas the rest 44.8% (100% - 14.6%) related to work skills, work pressure, job analysis, and others.

Simultaneous Hypothesis Testing (F Test)

The purpose of simultaneous hypothesis testing is to see how the independent variables affect the dependent variable simultaneously. These are the results of concurrent hypothesis testing:

Table 4: Simultaneous Test

ANOVA [a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,554	3	,185	3,681	0.019 [b]
	Residual	2,205	45	0.050		
	Total	2,759	48			

a. Dependent Variable: Productivity

b. Predictors: (Constant), Education, Age, Years of Service

Table 4 states degrees independent 1 (df1) = k–1 = 4-1 = 3, and degrees independent 2 (df2) = NK =48-4= 45, where n = sum sample, k = number of variables. $_{\text{Table}}$ F value at level trust the significance of 0.05 is 2.57. Obtained score F_{count} (3.681) > F_{table} (2.57) and probability significance of 0.019 < 0.05 means the variables of age, years of service, and education impact positive as well as significant by Simultaneous on productivity work employees of PT Jasa Raharja Medan City.

Partial Hypothesis Testing (T-Test)

Following results testing hypothesis by partial:

Table 5: Partial Test (T-Test)

Coefficients [a]

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	,143	,256		,560	,578
	Age	,085	,085	,164	,996	,325
	Working Period	-,108	0.070	-,274	1.539	,131
	Education	0.035	,061	,102	,573	,570

a. Dependent Variable: ABS_RES

Table value for profitability 0.05 in degrees free (df) = 48-4 = 45 is as big as 2.01063. The following are results testing the hypothesis by Partial could explain:

1. On testing hypothesis obtained score $t_{count} < t_{table}$ or 0.996 < 1.201063 obtained partially and significant obtained 0.325 < 0.05. This means that H0 is rejected and Ha accepted which means variable age takes an effect positive as well as significant on the productivity of employees of PT Jasa Raharja Medan City.
2. Hypothesis test results Partial get score $t_{count} < t_{table}$ or 1.539 < 1.201063 and significant which obtained 0.131 < 0.05. This means that H0 is rejected and Ha accepted which means working life variable impact positive as well as significant to the productivity of employees of PT Jasa Raharja Medan City.
3. Hypothesis test results Partial obtained score $t_{count} < t_{table}$ or 0.573 < 1.201063 and significant obtained 0.570 < 0.05. This means that H0 is rejected and Ha accepted which means variable education impact is positive as well as significant to the productivity of employees of PT Jasa Raharja Medan City.

Discussion

The Effect of Age on Employee Productivity

In the results of the partial hypothesis test, the value of tcount < ttable or 0.996 < 1.201063 and significant obtained 0.325 <0.05. This means that H0 is rejected and Ha is accepted, which means that the age variable has a positive and significant impact on the productivity of PT Jasa Raharja's Medan City employees. Based on the results of this study, shows that age has an overall effect on employee productivity at PT Jasa Raharja Medan City. According to Simanjuntak (2018) "As workers age, the level of worker productivity increases along with the increasing productive age of workers, and the closer to old age the level of worker productivity decreases due to various reasons, both physical and health factors that influence it". The results of this study are in line with the study of Wisnu Sentana (2015) which shows that age has a positive and significant influence on labor productivity.

The Effect of Working Period on Employee Productivity

Test hypothesis by Partial get score $t_{count} > t_{table}$ or 1.539 > 1.201063 and significant which obtained 0.131 < 0.05. This means that H0 is rejected and Ha accepted that is by Partial working life variable impact positive as well as significant to productivity employees of PT Jasa Raharja Medan City. Working time is period working people time from start enter until now still work. According to Suma'mur (2014) “Terms of work can be interpreted as the period or the length of time an employee enters a company for a certain period. The results of research conducted at PT Jasa Raharja, Medan City in 2021, show that: the majority of workers with >2 years of service Thing this could conclude that the longer the working period employee so productivity will also higher. Workers with short tenure risk productivity it works.

The Effect of Education on Employee Productivity

Hypothesis test Partial get score $t_{count} < t_{table}$ or 0.573 < 1.201063 and significant which obtained 0.570 <0.05. This means that H0 is rejected and Ha accepted which means variable education impact is positive as well as significant to the productivity of employees of PT Jasa Raharja Medan City. According to Sedarmayanti (2017) “Education is one of the causes that affect increase inventiveness employee, but that inventiveness employee as well as capable affected by upgrading nursery, skills, technology as well as level performance “. Education for Ruky (2019) “namely activities carried out by the parties employee in effort understand the profession, as well as action, is chosen which causes relative transformation temper permanent in attitude operation employee “. Learning is not free from the essence audience, because ingredient tree learning is the audience. because of that income level created invention from existing employees various variety adrift level learning each employee.

Conclusion

The conclusion from the results study is as follows: Based on the results of the simultaneous F test are obtained scores F_{count} 3.681 > F_{table} 2.57 and probability significance 0.019 < 0.05 which means that 140variable age, years of service, and 140variables affect positive and significant the productivity of employees of PT Jasa Raharja Medan City. In the partial T-test results obtained score $T_{count} > T_{table}$ or 0.996 < 1.201063 with score significant 0.325 < 0.05 which means that 140variable age has influence positive and significant to productivity employees of PT Jasa Raharja Medan City. On results. test partial T is obtained value. $T_{count} > T_{table.}$ or 1.539 < 1.201063 with. significant value. 0.131 < 0.05 which means that. working life

variable has a positive influence of and a significant on the productivity of employees of PT Jasa Raharja Medan City. Partial T-test obtained. value. $t_{count} > t_{table.}$ or 0.573 < 1.201063 with significant value. 0.570 <0.05 which means that education variable has a positive effect significant on the productivity of employees of PT Jasa Raharja Medan City.

References

Amron. (2015). ***Analysis Influential Factors To Labor Productivity at Cellular Telecommunication Outlets*** **Makassar City:** Thesis, Faculty of Economics and Business, Hasanudin University.

reward Your Majesty Sukmana. (2013). ***Effect of Education Level, Experience Work, and Giving Incentive Work To Labor Productivity.*** **REGENCY. JEMBER:** CV. YUGATAMA PRIMA MANDIRI.

Pitriyani1, Abd, Halim. (2020). ***Influence Attitude Work and Skills Work To Productivity Work Employees.*** **MEDAN:** CV. MERANTI.Irma bi Kurniawati. (2014). ***Working Period With Jobengagement in Employees.*** **MALANG:** PT. POMALAA VARIETY OF MINES.

Arul Dicky Permana, Muhammad Mansur, Fahrurrozi Rahman. (2020). ***Effect of Education, Age, and Experience Work To Productivity Employees.*** **REGENCY. LAMONGAN EAST JAVA:** PT. ANELA KM 79.

Kingkin, P., Rosyid, HF, & Arjanggi, R. (2020). ***Satisfaction Work and Working Period As predictor Commitment Organization of Employees.*** **PURBALINGGA:** PT ROYAL KORINDAH.

Nur Khojin, Suci Nur Utami and Muhammad Syaifulloh. (2020). ***The Effect of Education Level on Productivity work.*** **AGRIBUSINESS SUB TERMINAL PROHIBITION:** ONION BUYER.

Martina Trisnawaty and Parwoto. (2020). ***Influence Environment Work and Workload To Productivity Work Employees.*** **JAKARTA:** PT. JS JAKARTA.

Kurniawan, Asri Nur Muin and Dyan Fauziah Suryadi. (2019). ***Influence Environment Work and Motivation To Productivity Work Employees.*** **SOUTH SULAWESI BRANCH:** PT. RAHARJA SERVICES (PERSERO).

Nurul Chikmah. (2020). ***Influence of Education Level, Knowledge, and Ability Officer Against Productivity Work.*** **GRESIK REGENCY** MINISTRY OF RELIGION. Umi Mafaza Hafni. (2017). ***Analysis Influence of Education Level, Culture Organization, Experience Work And Discipline Work Against Productivity Work Employees.*** **SEMARANG:** BTN SYARIAH KC