

How Can the Work Environment Affects the Lecturers' Creativity

Hasmawati Hasmawati¹, Mansyur Ramly², Achmad Gani³, Arifin Arifin⁴,
^{1,2,3,4} (Management, University of Muslim Indonesia, Indonesia)

ABSTRACT : Lecturer creativity is a personal trait that is reflected in the lecturer's ability to create something new, process something that already exists to be more innovative or combine various things to be more useful. This research is oriented to examine and analyze the dimensions of the work environment, namely the dimensions of the physical environment (internal), non-physical environment (internal), and physical environment (external) and non-physical environment (external) in 101 lecturers at the College of Sciences. Economics (STIE) in Makassar City, South Sulawesi Province (Indonesia). Hypothesis testing with the support of partial least squares structural equation modeling (PLS-SEM) with Smart PLS 3 software. The research findings provide evidence that the work environment in the dimensions of the physical environment (external) felt by the lecturers and the Non-physical environment (internal) perceived by the lecturers make a real (strong) contribution to improving lecturer creativity towards an increasing direction. conditions Different shown in the dimensions of the Non-physical environment (external) and Physical environment (internal) cannot increase lecturer creativity in a high direction due to harmonization of relationships with fellow lecturers and/or students, although it has been well established but has not been able to improve the ability of lecturers to generate and implement new ideas.

KEYWORDS : *Environment, external, internal, non-physical, physical*

I. INTRODUCTION

Implementation of academic and student activities at the College of Economics in Makassar City is carried out independently by the College of Economics (Private Higher Education) under the control of the Regional Higher Education Service Institute 9. The 2020 lecturer performance report explains that at 13 schools The College of Economics (STIE) in Makassar City there are 526 lecturers who have functional positions of Professor, Head Lector, Lector and Expert Assistant, even at some of the Economics Colleges there are still lecturers who carry out the Tri Dharma (teaching, research and service) who do not supported by functional positions. In addition, the report found some interesting facts, such as, the creativity of lecturers which is still relatively low, this was identified due to limited resources and funding sources owned by private universities which had an impact on the low bargaining position of private universities in facing the challenges of globalization

The study of the creativity of lecturers can be carried out using a human resource theory approach. Human resource theory assumes that humans need to be recognized for their existence, desires and desires where humans in addition to need status, recognition, acceptance but also want fair opportunities to develop and apply their abilities to increase their creativity at work.

Individual creativity means the ability to identify opportunities for new products, new methods, new equipment or work-related ideas that can be operated (Oldham & Chummings, 1996: 86). Creativity refers to the creation of useful new products, services, ideas, procedures, or processes by individuals working together in complex social systems (Auger & Woodman, 2016). The creativity of lecturers in the teaching and learning process includes creativity in planning learning, creativity in implementing learning, and creativity in evaluating students (Asfandiyar, 2009).

There are several factors that influence the high or low creativity of lecturers' work, including the work environment (Shalley et al., 2004). Basically, the work environment itself provides certain incentives or rewards in relation to individual needs. If individual needs can be met from a work environment, it will lead to an increase in creativity. The work environment is all conditions related to work relations, good relations with superiors and co-workers, or relations with subordinates (Sedarmayanti, 2001:32). On the other hand, other scholars argue that the work environment is everything that is around workers that can affect work including

lighting settings, noise control, workplace cleanliness settings and workplace safety settings (Gitosudarmo, 2000; Hasanuddin & Sjahrudin, 2017).

Several empirical facts show that the internal work environment that is oriented towards employee involvement in various company activities has a real impact on employee work creativity so that management needs to spur employee involvement in work (Adekanmbi & Ukpere, 2021). Creativity is one of the fundamental elements that must be considered, every individual is creative by nature and that creative capacity can be conditioned by different variables in the work environment. The internal work environment that employs employees with neuroticism (N) and openness (O) personalities has been shown to have a significant effect on the high level of work creativity produced (García et al., 2019).

In today's ever-changing business environment, the ability of organizations to generate innovative ideas and processes in response to change is considered critical to the success and survival of the organization. In such an environment, motivating employees to engage and engage actively in innovative and creative behavior can result in the organization gaining a competitive advantage (Chughtai, 2013). Organizations that do not have a strategic focus on innovation and creativity and do not have a culture that encourages innovative behavior will find it difficult to survive in these turbulent times. The innovative ability of the organization is highly dependent on all employees at all levels of the organization. Employee-driven innovation is known as employee-driven innovation (EDI). Even though organizations understand the importance of EDI, a large number of barriers within the organization still hinder EDI and creativity. The internal work environment plays an important role as an employee's creative potential. Organizations need an innovative culture that motivates employee innovation and learning. Employees are rewarded for innovative behavior, organizations that have bureaucratic structures with rigid controls can cause bottlenecks and hinder innovation efforts by employees.

Organizations have policies and procedures that can hinder innovation, as they may be too risky to deviate from the rules. Davis & Newstrom (1993: 171) mention that although the size and diversity of an organization can be considered as a strength, it can also conflict with good management with increasing levels of management and wider spans of control. This can cause barriers among several units within the organization (Leach, 2020).

Currently, all organizations cannot escape the increasingly fierce competition. This situation demands never-ending innovation to survive and grow. An innovative organization cannot be achieved without creative employees and a supportive work environment. In general, the factors that can affect employee creativity consist of two main factors, namely personal factors and contextual factors. Personal factors come from within the employee's personal and affect employee creativity directly (personality and intrinsic motivation) (Zhou & Shalley, 2003; Kanto & Sjahrudin, 2020). Contextual factors are dimensions outside the employee's self that have the potential to influence employee creativity (Shalley et al., 2004). Contextual factors are work environment support and non-work environment support, work environment support can be seen in the form of support from supervisors and coworkers, while non-work environment support is seen through support from family (Madjar et al., 2002). Supervisors and co-workers are people who are around employees, who interact directly with employees. Through interactions with the people around them, employees are predicted to be able to increase their creativity through emotional and informational support provided by supervisors and co-workers (Madjar, 2008).

Empirical facts show that support from colleagues has a significant effect on promoting employee creativity, but support from superiors and family does not have a significant effect on creativity. People who are outside the employee's work environment (such as family, friends), are predicted to also be able to provide support in the form of providing information and advice. Families are also predicted to be able to provide information and advice more freely without being bound by organizational procedures. In addition, families are considered to have stronger emotional closeness so that employees find it easier to exchange ideas with their families (Paramitha, 2017).

The modern approach to creativity claims that every human being can produce creative ideas and that is not an inborn trait. Social settings including teamwork, supervision and the environment play an important role in determining individual creativity. Previous research has studied empirically the role of social exchange factors in generating creativity in the work environment, that there is a relationship between social exchange factors and work environment creativity. In addition, sharing expert knowledge mediates the relationship between procedural justice and creativity in the work environment (Tahir & Athar, 2018).

Other evidence shows that if there is ambiguity in the contextual work environment, that in the physical work environment there is no significant positive causality in increasing employee creativity, but in the non-physical work environment, significant positive results are obtained in creating employee creativity at work (Wantoyo & Remiasa, 2010). Similar results were also proven by other researchers, that the work environment has a positive and significant effect on employee creativity (Widhiastana et al., 2017). Consistent with these findings, it is also shown that there is a significant direct and positive effect of the work environment on work creativity so that a statement can be made that the better the work environment, the more it supports increasing employee creativity at work.

II. LITERATURE REVIEW

Implementation of academic and student activities at the College of Economics in Makassar City is carried out independently by the College of Economics (Private Higher Education) under the control of the Regional Higher Education Service Institute 9. The 2020 lecturer performance report explains that at 13 schools The College of Economics (STIE) in Makassar City there are 526 lecturers who have functional positions of Professor, Head Lector, Lector and Expert Assistant, even at some of the Economics Colleges there are still lecturers who carry out the Tri Dharma (teaching, research and service) who do not supported by functional positions. In addition, the report found some interesting facts, such as, the creativity of lecturers which is still relatively low, this was identified due to limited resources and funding sources owned by private universities which had an impact on the low bargaining position of private universities in facing the challenges of globalization

The study of the creativity of lecturers can be carried out using a human resource theory approach. Human resource theory assumes that humans need to be recognized for their existence, desires and desires where humans in addition to need status, recognition, acceptance but also want fair opportunities to develop and apply their abilities to increase their creativity at work.

Individual creativity means the ability to identify opportunities for new products, new methods, new equipment or work-related ideas that can be operated (Oldham & Chummings, 1996: 86). Creativity refers to the creation of useful new products, services, ideas, procedures, or processes by individuals working together in complex social systems (Auger & Woodman, 2016). The creativity of lecturers in the teaching and learning process includes creativity in planning learning, creativity in implementing learning, and creativity in evaluating students (Asfandiyar, 2009).

There are several factors that influence the high or low creativity of lecturers' work, including the work environment (Shalley et al., 2004). Basically, the work environment itself provides certain incentives or rewards in relation to individual needs. If individual needs can be met from a work environment, it will lead to an increase in creativity. The work environment is all conditions related to work relations, good relations with superiors and co-workers, or relations with subordinates (Sedarmayanti, 2001:32). On the other hand, other scholars argue that the work environment is everything that is around workers that can affect work including lighting settings, noise control, workplace cleanliness settings and workplace safety settings (Gitosudarmo, 2000; Hasanuddin & Sjahrudin, 2017).

Several empirical facts show that the internal work environment that is oriented towards employee involvement in various company activities has a real impact on employee work creativity so that management needs to spur employee involvement in work (Adekanmbi & Ukpere, 2021). Creativity is one of the fundamental elements that must be considered, every individual is creative by nature and that creative capacity can be conditioned by different variables in the work environment. The internal work environment that employs employees with neuroticism (N) and openness (O) personalities has been shown to have a significant effect on the high level of work creativity produced (García et al., 2019).

In today's ever-changing business environment, the ability of organizations to generate innovative ideas and processes in response to change is considered critical to the success and survival of the organization. In such an environment, motivating employees to engage and engage actively in innovative and creative behavior can result in the organization gaining a competitive advantage (Chughtai, 2013). Organizations that do not have a strategic focus on innovation and creativity and do not have a culture that encourages innovative behavior will find it difficult to survive in these turbulent times. The innovative ability of the organization is highly dependent on all employees at all levels of the organization. Employee-driven innovation is known as employee-driven innovatio (EDI). Even though organizations understand the importance of EDI, a large the number of barriers within the organization still hinder EDI and creativity. The internal work environment plays an important role as an employee's creative potential. Organizations need an innovative culture that motivates employee innovation and learning. Employees are rewarded for innovative behavior, organizations that have bureaucratic structures with rigid controls can cause bottlenecks and hinder innovation efforts by employees.

Organizations have policies and procedures that can hinder innovation, as they may be too risky to deviate from the rules. Davis & Newstrom (1993: 171) mention that although the size and diversity of an organization can be considered as a strength, it can also conflict with good management with increasing levels of management and wider spans of control. This can cause barriers among several units within the organization (Leach, 2020).

Currently, all organizations cannot escape the increasingly fierce competition. This situation demands never-ending innovation to survive and grow. An innovative organization cannot be achieved without creative employees and a supportive work environment. In general, the factors that can affect employee creativity consist of two main factors, namely personal factors and contextual factors. Personal factors come from within the employee's personal and affect employee creativity directly (personality and intrinsic motivation) (Zhou & Shalley, 2003; Kanto & Sjahrudin, 2020). Contextual factors are dimensions outside the employee's self that have the potential to influence employee creativity (Shalley et al., 2004).

Contextual factors are work environment support and non-work environment support, work environment support can be seen in the form of support from supervisors and coworkers, while non-work environment support is seen through support from family (Madjar et al., 2002). Supervisors and co-workers are people who are around employees, who interact directly with employees. Through interactions with the people around them, employees are predicted to be able to increase their creativity through emotional and informational support provided by supervisors and co-workers (Madjar, 2008).

Empirical facts show that support from colleagues has a significant effect on promoting employee creativity, but support from superiors and family does not have a significant effect on creativity. People who are outside the employee's work environment (such as family, friends), are predicted to also be able to provide support in the form of providing information and advice. Families are also predicted to be able to provide information and advice more freely without being bound by organizational procedures. In addition, families are considered to have stronger emotional closeness so that employees find it easier to exchange ideas with their families (Paramitha, 2017).

The modern approach to creativity claims that every human being can produce creative ideas and that is not an inborn trait. Social settings including teamwork, supervision and the environment play an important role in determining individual creativity. Previous research has studied empirically the role of social exchange factors in generating creativity in the work environment, that there is a relationship between social exchange factors and work environment creativity. In addition, sharing expert knowledge mediates the relationship between procedural justice and creativity in the work environment (Tahir & Athar, 2018).

Other evidence shows that if there is ambiguity in the contextual work environment, that in the physical work environment there is no significant positive causality in increasing employee creativity, but in the non-physical work environment, significant positive results are obtained in creating employee creativity at work (Wantoyo & Remiasa, 2010). Similar results were also proven by other researchers, that the work environment has a positive and significant effect on employee creativity (Widhiastana et al., 2017). Consistent with these findings, it is also shown that there is a significant direct and positive effect of the work environment on work creativity so that a statement can be made that the better the work environment, the more it supports increasing employee creativity at work.

III. RESEARCH METHOD

This study uses a quantitative approach through *explanatory survey* is a research method that aims to determine the characteristics and explain the relationship between the variables studied by using a number of samples (Cooper & Schindler, 2008) . carried out during a certain period of time. The unit of analysis in this study is 101 lecturers who are permanent lecturers and have functional positions of Professor, Head Lector, Lector and Expert Assistant who work at 13 Colleges of Economics (STIE) in Makassar City, South Sulawesi Province (Indonesia). Hypothesis testing with the support of partial least squares structural equation modeling (PLS-SEM) with Smart PLS 3 software.

IV. RESULTS

The description of the respondents based on the criteria can be shown in the following table:

Table 1. Respondents

Characteristics (N=101)		Frequency	Percent
Gender	Male	79	78.22
	Female	22	21.78
Ages (Years)	> 25	13	12.87
	> 35	38	37.62
	> 45	33	32.67

	> 55	17	16.83
Lecturer Functional Positions	Instructor	7	6.93
	Assistant Professor	41	40.59
	Associate Professor	50	49.50
	Professor	3	2.97
Experience in work (Years)	> 5	4	3.96
	> 15	71	70.30
	> 25	19	18.81
	> 35	7	6.93
Level of Education	Magister	84	83.17
	Doctor	17	16.83

The table shows that the dominant male respondents are 79 lecturers or 78.22%, this condition proves that male lecturers have more work skills in completing the three pillars of higher education as their obligations. This fact is consistent with the age of the respondents, the majority of whom are > 35 years old (38 lecturers or 37.62%) so that it can be stated that the lecturers are relatively young so that they can easily complete their tasks and obligations. The majority of lecturers based on functional positions in this study are Associate Professor functional, namely 50 lecturers or 49.50%. This reality shows that lecturers have sufficient teaching experience in implementing the three pillars of higher education. The working period of the lecturers is dominated by the work experience they have, which is > 15 years with 71 lecturers or 70.30% with the final education level dominated by lecturers with Master's degrees as many as 84 lecturers and or 83.17%.

Description of variables

Research analyzes 2 (two) variables which have the position as independent and dependent variables. The use of the work environment as an independent variable is done by doing a break down so that acting as the focus of observation is the dimension of the variable, on the other hand for the dependent variable, it is only done by analyzing the variable, namely the creativity of the lecturer. For this reason, the description of the variables can be shown in the following table:

Table 2. Variable Description

Construct	Mean	Value an opinion
Physical Environment (Internal)	3.90	Enough
Non-Physical Environment (Internal)	4.11	Well
Physical Environment (External)	4.21	Well
Non-Physical Environment (External)	4.53	Well
Work environment	4.19	Well
Responsive creativity	4.32	High
Expected creativity	4.41	High
Creative Contributors	4.41	High
Proactive creativity	4.34	High
Lecturer Creativity	4.37	High

The descriptions variable shows that there is only 1 (one) of the dimensions of the work environment variable whose opinion score is at a sufficient level, namely the physical internal environment while the other 3 (three) are the non-physical internal environment, the physical external environment and the non-physical external environment. shows a good level. In contrast to the creativity of the lecturer, that the overall dimensions used show a high level.

Instrument Validity and Reliability Test

This research data collection uses a questionnaire, so the seriousness or sincerity of the respondents in answering the questions is an important element. The validity or validity of the data from social research is largely determined by the instrument used. An instrument is said to be good if it meets three main requirements, namely: (1) valid or valid, (2) reliable or reliable, and (3) practical (Cooper & Schindler, 2003).

1. Validity

Validity test with SmartPLS 3.0 program can be seen from the *loading factor* for each construct indicator. The condition that is usually used to assess validity is that the *loading factor* must be more than 0.70. Furthermore, discriminant validity is related to the principle that *manifest variables* should not be highly correlated, the way to test *discriminant validity* with reflective indicators is to look at the *cross loading* for each variable must be > 0.70 and the value is more higher than other variables (Ghozali & Latan, 2015: 74).

Table 3. Validity

Construct	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Creative Contributors <- KD	0.797	0.040	19.823	0.000
Proactive creativity <- KD	0.774	0.050	15.553	0.000
Responsive creativity <- KD	0.838	0.034	24.545	0.000
Expected creativity <- KD	0.859	0.029	29.205	0.000
LEF1 <- Physical Environment (External)	0.933	0.014	66.061	0.000
LEF2 <- Physical Environment (External)	0.915	0.023	39.346	0.000
LEF3 <- Physical Environment (External)	0.836	0.067	12.552	0.000
LENF1 <- Non-Physical Environment (External)	0.860	0.045	19.243	0.000
LENF2 <- Non-Physical Environment (External)	0.902	0.030	29.874	0.000
LIF2 <- Physical Environment (Internal)	0.953	0.016	59.855	0.000
LIF3 <- Physical Environment (Internal)	0.961	0.012	81.633	0.000
LINF1 <- Non-Physical Environment (Internal)	0.929	0.020	45.701	0.000
LINF2 <- Non-Physical Environment (Internal)	0.911	0.024	37.833	0.000
LINF3 <- Non-Physical Environment (Internal)	0.918	0.022	41.531	0.000

The table shows that all indicators meet *discriminant validity* because the *cross loading* on all indicators is > 0.70 . The *discriminant validity* on the Physical Environment (Internal) dimension is shown in the LIF3 which is the respondent's response to the availability of facilities and infrastructure, while the lowest is shown in the lecturer's creativity variable on the Proactive creativity dimension, namely the lecturer's ability to generate and recognize new ideas.

2. Reliability

The reliability test in PLS-SEM uses the SmartPLS 3.0 program, to measure the reliability of a construct with reflexive indicators, it can be done by calculating the *composite reliability*. The condition that is usually used to assess construct reliability is that *composite reliability* must be greater than 0.7 for *confirmatory* and a value of 0.6 – 0.7 is still acceptable for exploratory research (Ghozali & Latan, 2015: 75).

Table 4. Reliability Test (Instrument Reliability)

Construct	Original Sample (O)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values
Lecturer Creativity	0.890	0.017	51.963	0.000
Physical Environment (External)	0.924	0.017	55.815	0.000
Non-Physical Environment (External)	0.874	0.022	40.301	0.000
Physical Environment (Internal)	0.956	0.013	73.918	0.000
Non-Physical Environment (Internal)	0.943	0.012	80.513	0.000

Evaluation of Measurement Model (*Outer Model*)

A construct or latent variable that cannot be measured directly. Empirical analysis aims to validate the model and construct reliability that reflects the parameters on the latent variables that are built based on theory and empirical studies. This study uses four latent variables, namely remuneration, work discipline, work motivation and employee performance with variable indicators that are reflective.

The *outer model* or *measurement model* is an assessment of the validity and reliability of research variables. There are three criteria to assess the *outer model*, namely *discriminant validity*, *compositereliability* and *convergent validity*. Based on the three assessment criteria for the measurement model from the *bootstrapping* in the PLS method, the measurement model test for each indicator that reflects the construct or latent variable can be explained as follows:

1. Discriminant Validity

Discriminant validity using cross loading values. If the cross loading of each indicator of the relevant variable is greater than the cross loading of other variables, then the indicator is said to be valid.

Table 5. Cross Loading

Construct	Physical Environment (External)	Non-Physical Environment (External)	Physical Environment (Internal)	Non-Physical Environment (Internal)	Lecturer Creativity
LEF1	0.933				
LEF2	0.915				
LEF3	0.836				
LENF1		0.860			
LENF2		0.902			
LIF2			0.953		
LIF3			0.961		
LINF1				0.929	
LINF2				0.911	
LINF3				0.918	
Contributors					0.797
Proactive					0.774
Responsive					0.838
Expected					0.859

The computational results in Table 5. are presented with the results of the *cross loading calculation*, which shows that the overall *cross loading* of the variable indicator is above the *cross loading* of the tolerance limit greater than 0.60 so that the research instrument is said to be discriminantly valid. *Discriminant validity* in this approach is to use the Fornell-Larcker criteria (Fornell & Larcker, 1981) where the square root value of the AVE of a construct must be greater than its correlation value with other constructs. The following table is a summary of the Fornell-Larcker criteria

Table 6. Discriminant validity (fornell-larcker criterion)

fornell-larcker criterion	Lecturer Creativity	Physical Environment (External)	Non-Physical Environment (External)	Physical Environment (Internal)	Non-Physical Environment (Internal)
Lecturer Creativity	0.818				
Physical Environment (External)	0.493	0.896			
Non-Physical Environment (External)	0.431	0.673	0.881		
Physical Environment (Internal)	0.359	0.415	0.353	0.957	
Non-Physical Environment (Internal)	0.531	0.362	0.379	0.382	0.919

Fornell-larcker criterion for all variables designed in this study are greater than the correlation between the latent variable and other latent variables, so that the instrument for each variable is said to be a valid discriminant. Thus the research instrument used to measure all latent variables or constructs in this study met the criteria for discriminant validity.

2. Convergent Validity

Convergent validity measures the validity of indicators as constructs, which can be seen from the outer loading. The indicator is considered valid if it has an outer loading above 0.70 which is highly recommended, however, a loading 0.50-0.60 can still be tolerated with a t statistic above 1.96 or a p-value <0.05. The outer loading of an indicator with the highest value means that the indicator is the strongest or most important measure of reflecting on the variables. A more detailed description of the test results of the analysis and evaluation of the measurement model of each latent variable or construct of this research is as follows:

Variable Measurement Evaluation

1. Composite Validity

Composite reliability tests the reliability between the indicators of the constructs that make it up. Composite reliability said to be good, if the value is above 0.70. The results of the composite reliability the measurement model in this study can be presented in the following table:

Table 7. Instrument Reliability

Construct	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Lecturer Creativity	0.834	0.838	0.890	0.669
Physical Environment (External)	0.878	0.915	0.924	0.802
Non-Physical Environment (External)	0.714	0.729	0.874	0.777
Physical Environment (Internal)	0.909	0.915	0.956	0.916
Non-Physical Environment (Internal)	0.909	0.910	0.943	0.845

The test results in Table 6 obtained the *composite reliability* the Lecturer Creativity variable of 0.890; Physical Environment (External) of 0.924; Non-Physical Environment (External) of 0.874 and Physical Environment (Internal) = 0.956; and Non-Physical Environment (Internal) = 0.943. This means that the four latent variables analyzed have good composite reliability because their values are greater than 0.70. It can be concluded that all the instruments used in this study have met the criteria or are appropriate to be used in measuring the overall latent variables, namely: remuneration, work discipline and work motivation as well as employee performance, because they have high suitability and reliability.

Based on the results of the evaluation of the convergent and discriminant validity of the indicators and construct reliability for the indicators, it can be concluded that the indicators as a measure of the latent variable are valid and reliable gauges, respectively. Thus, the goodness of fit model can be known by evaluating the inner model.

2. Evaluation of Goodness of Fit

Model Structural model is evaluated by taking into account Q^2 predictive relevance model that measures how well the observed value is generated by the model. Q^2 is based on the coefficient of determination of all dependent variables. The magnitude of Q^2 has a value with a range of $0 < Q^2 < 1$, the closer the value to 1 means the better the model. The value of Q^2 predictive relevance on endogenous variables is declared good (fit model) if the value is $>$ from exogenous variables.

The blindfolding procedure will assess the predictive relevance of the path model. Predictive relevance (Q^2) is often called predictive sample reuse to validate the endogenous construct model (Goodness of Fit Model). The meaning of the value of Q^2 predictive relevance is 0.02 the validity of the predictive relevance of the weak model fit; 0.15 the validity of the predictive relevance of the moderate fit model; and 0.35 indicates that the validity of the predictive relevance of the fit model is strong. The results of the blindfolding procedure will produce a cross validated redundancy estimation construct. SSE is a *sum square prediction error*, while the term SSO is a *sum squared observation*, so the value of $Q^2 = (1 - SSE/SSO)$.

Effect size Q^2 as the natural predictive value of the observed contribution to the formation of endogenous variables. Smart-PLS does not automatically calculate the *effect size* Q^2 , it must be calculated manually. With the following conditions: (a) 0.02 = indicates a small contribution effect (*small effect*), (2) 0.15 = indicates a medium-effect contribution, and 0.35 = indicates a large contribution effect (*large effect*). The magnitude of the effect (*Goodness of Fit model*) can be shown in the following table:

Table 8. Goodness of Fit (Construct Cross-validate Redundancy)

Causality on	SSO	SSE	$Q^2 (=1-SSE/SSO)$
Lecturer Creativity	404.000	309.581	0.234

These results indicate that if the value of $Q^2 (=1-SSE/SSO) = 0.540$, the value is greater than 0.23 indicating a medium-effect, so it can be used in analyzing the research hypothesis.

Structural Model and Research Hypotheses

Structural model (Inner model) is evaluated by looking at the path parameter coefficient values of the relationship between latent variables. Structural model testing (inner model) was carried out after the relationship model built in this research was in accordance with the observed data and the overall model suitability (goodness-of-fit model). The purpose of testing the structural relationship model is to determine the relationship between latent variables designed in this study. From the output of the PLS model, the structural model and hypothesis testing were carried out by looking at the estimated path coefficient values and critical point values (t-statistics) which were significant $\alpha < 0,05$. The results of the complete data analysis can be seen in the output of the PLS model, (Appendix of processed data). The description of the results of testing the relationship between the variables of this study can be explained as testing the path coefficients and hypotheses. Hypothesis testing and path coefficients between variables physical environment (external), non-physical environment (external), physical environment (internal) and non-physical environment (internal) effect on lecturer creativity can be shown in the following figure:

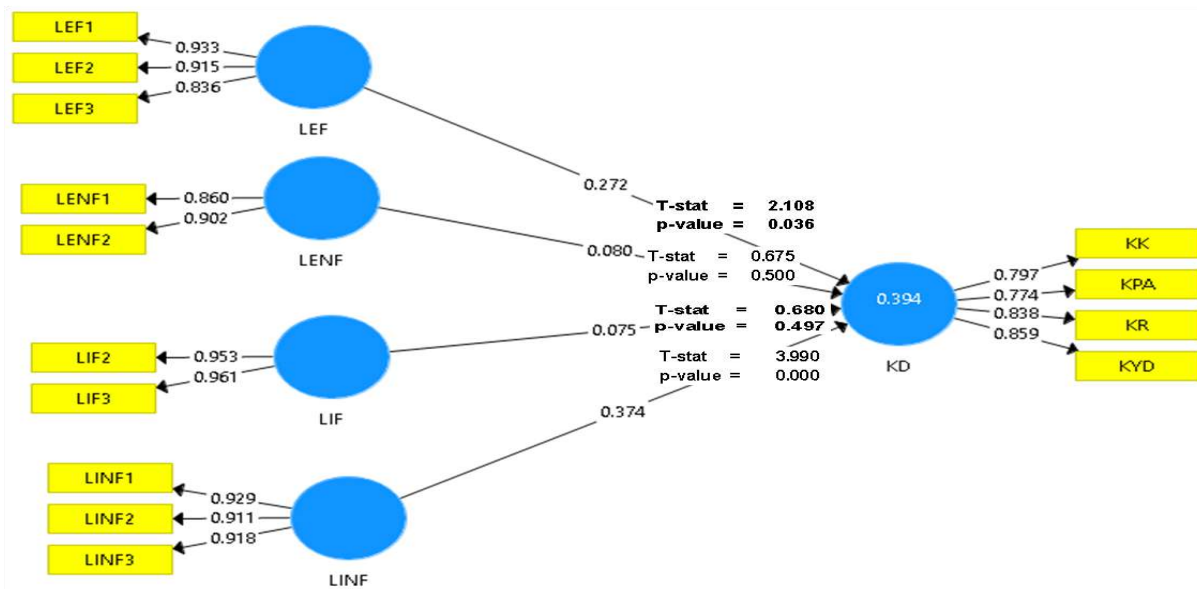


Figure 1. Path Coefficient Diagram and Hypothesis Testing

There are four causalities, each 2 (two) proven and 2 (two) rejected, that the direct effect tested has five significant effects, namely: (1) physical environment (external) has a significant positive effect on lecturer creativity, (2) non-physical environment (external) has a positive insignificant effect on lecturer creativity, (3) physical environment (internal) has a positive and insignificant effect on lecturer creativity, and (4) non-physical environment (internal) has a significant positive effect on lecturer creativity. The results of testing the direct influence between the variables in Figure 1. can be presented in full in the following table:

Table 9. Path Coefficient and Hypothesis Testing

Hipotesis	Causality effect	Original Sample (O)	T Statistics (O/STDEV)	P-values
H ₁ .	PE (ex) → LC	0.272	2.108	0.036
H ₂ .	NPE (ex) → LC	0.080	0.675	0.500
H ₃ .	PE (int) → LC	0.075	0.680	0.497
H ₄ .	NPE (int) → LC	0.374	3.990	0.000

The results of the data analysis in Table 8 can be described as the appearance of the path coefficients which aim to answer whether the proposed hypothesis can be accepted or rejected, so that it can be stated as follows:

H₁: The better the physical environment (external) in its implementation can be increasing Lecturer creativity

The results of testing the influence of the physical environment (external) on lecturer creativity can be proven by the *estimated* path coefficient of 0.272 with a positive direction. The path coefficient marked positive means that the influence of the physical environment (external) on lecturer creativity is a linear path. Then it can also be proven by the value of the critical point (t-statistics) is 2.108 and the probability value (*p-value*) is 0.036 < $\alpha = 0.05$. The results of hypothesis testing (H₁) prove that the better the physical environment (external) perceived by the lecturer, the higher the lecturer creativity shown by the lecturer in carrying out his functions and duties. This means that the improvement of the work environment on the dimensions of the physical environment (external) is unidirectional and real towards increasing lecturer creativity, so that the hypothesis proposed in this study can be accepted or supported by empirical facts. This research confirms that if lecturers are supported by easy access and the availability of adequate transportation facilities, in their daily life lecturers can easily get new ideas so that they will be more creative in carrying out teaching and research and it will be easier to do community service. This is reflected in the lecturer's response to changes experienced by students, current knowledge and socio-cultural factors.

The results of this study are relevant to the research conducted by García-García et al. (2019) the research findings that individuals with neuroticism (N) and openness (O) personalities are personal elements that support the physical environment (external) so it is believed that these personalities can support the achievement of lecturers' work creativity. Improving the quality of the work environment results in a decrease in the number of error rates, complaints, absences and can create high performance (Govindarajulu, 2004).

H₂: The better the Non-physical environment (external), in its implementation it can be increase Lecturer creativity

The results of testing the influence of the non-physical environment (external) on lecturer creativity can be proven by the *estimated* path coefficient of 0.080 with a positive direction. The positive path coefficient means that the influence of the non-physical environment (external) on lecturer creativity is a linear path. Then it can also be proven by the value of the critical point (t-statistics) is 0.675 and the probability value (*p-value*) is 0.500 < $\alpha = 0.05$. The results of hypothesis testing (H₂) prove that the better the non-physical environment (external) perceived by the lecturer, but in practice, it cannot increase lecturer creativity in a high direction. This means that the improvement of the work environment on the dimensions of the non-physical environment (external) is unidirectional but not significant to the increase in lecturer creativity, so that the hypothesis proposed in this study cannot be accepted or is not supported by empirical facts. The inability of non-physical environment (external) lecturers in increasing lecturer creativity in a high direction is caused by the limitations of lecturers in fostering relationships, and establishing access with higher education service institutions as an extension of the government in this case the Ministry of Education and Culture of the Directorate of Higher

Education. It is also related to the lecturer's relationship with all existing stakeholders so that it has an impact on the occurrence of lecturer limitations in increasing student interest in the lecture material (teaching) given due to the limited information obtained by the lecturer regarding the personal factors possessed by each student. with the low ability of lecturers in increasing student interest in critical thinking through directed and measurable observations on the symptoms that occur in the social environment of society and natural phenomena. It is proven by the weak identification of lecturers in doing exposure and promotion related to fun learning efforts and the low encouragement from lecturers to develop their cognitive and creativity.

This study is relevant to the findings of previous researchers, that a group relationship is a group consisting of two or more people who have the same gender, interests, willingness, and abilities. If the relationship between co-workers, both individuals and groups, is less harmonious, it will result in disruption of the working environment (Sunyoto, 2012).

H₃: The better the Physical environment (internal), in its implementation it can be increase Lecturer creativity

The results of testing the influence of the physical environment (internal) on lecturer creativity can be proven by the *estimated* path coefficient of 0.075 with a positive direction. The path coefficient marked positive means that the influence of the physical environment (internal) on lecturer creativity is a linear path. Then it can also be proven by the value of the critical point (t-statistics) is 0.680 and the probability value (*p-value*) is 0.497 < $\alpha = 0.05$. The results of hypothesis testing (H₃) prove that the better the physical environment (internal) cannot increase lecturer creativity in a high direction. This means that the improvement of the Physical environment (internal) is unidirectional but does not make an important contribution in increasing lecturer creativity, so that the hypothesis proposed in this study cannot be accepted or is not supported by empirical facts. This condition is caused by harmonization of relations with fellow lecturers and or with students, although it has been well established, it has not been able to increase the ability of lecturers to come up with and implement new ideas.

Work environment support can be seen in the form of support from supervisors and co-workers. Bosses and co-workers are people who are around employees, who interact directly with employees. Through interactions with the people around them, employees are predicted to be able to increase their creativity through the emotional and informational support provided (Madjar, 2008).

H₄: The better the Non-physical environment (internal), the higher Lecturer creativity

The effect of Non-physical environment (internal) on lecturer creativity based on data analysis can be proven by the path coefficient of 0.374 in a positive direction. The path coefficient marked positive means that the non-physical environment (internal) for lecturer creativity is a linear path, as evidenced by the critical point value (t-statistics). of 3.990 and the probability value (*p-value*) of 0.000 < $\alpha = 0.05$. These findings indicate the acceptance of the hypothesis (H₃), that the better the Non-physical environment (internal) perceived by the lecturers, the real impact on the improvement of lecturer creativity is increasing, that the Non-physical environment (internal) is proven to make a real contribution in increasing lecturer creativity. . These results are due to a well-established relationship with all related parties (students, lecturers and decision makers) so that lecturers can find the best way to increase their potential (ability) so that the participation of fellow lecturers becomes an important part in bringing up lecturer creativity. This study confirms the statement of several scholars, that one's creative behavior at work has been one of the strongest drivers of performance, success, and long-term survival (Anderson, Potoènik, & Zhou, 2014; Hunter, Bedell & Mumford, 2007).

V. CONCLUSION

The better the physical environment (external) perceived by the lecturer, the higher the lecturer creativity shown by the lecturer in carrying out his functions and duties. Lecturers who have access to transportation support and facilities can easily get new ideas so they can show their creativity. This creativity is shown through positive responses from lecturers to changes experienced by students, current knowledge and socio-cultural factors. Lecturers who have neuroticism (N) and openness (O) personalities are personal elements that support the physical environment (external) so that they support the increase of lecturers' work creativity. Non-physical environment (external) that is felt by the lecturer in its implementation cannot increase lecturer creativity in a high direction. The inability of non-physical environment (external) lecturers in increasing lecturer creativity in a high direction is due to the limitations of lecturers in fostering relationships, and establishing access with higher education service institutions, similar facts are also found in lecturer relationships with all existing stakeholders so that it has an impact on the occurrence of limitations of lecturers in increasing student interest in lecture material

The better the physical environment (internal) cannot increase lecturer creativity in a high direction, this is due to harmonization of relationships with fellow lecturers and or with students even though it has been well established but has not been able to improve abilities lecturers to come up with and apply new ideas. The non-physical environment (internal) that is felt by the lecturer has a real impact on improving lecturer creativity which is increasing, that the Non-physical environment (internal) is proven to make a real contribution in increasing lecturer creativity. These results are due to a well-established relationship with all related parties (students, lecturers and decision makers) so that lecturers can find the best way to increase their potential (ability) so that the participation of fellow lecturers becomes an important part in bringing up lecturer creativity.

REFERENCES

- [1] Adekanmbi, F., & Ukpere, W. I. (2021). Stimulating creative behaviors in the work environment: influences of employee engagement, authentic leadership, and human capital factors on employee creativity. *EUREKA: Social and Humanities*,(5), 24-33
- [2] Akinyele, S. T. (2010). The influence of work environment on workers productivity: A case of selected oil and gas industry in Lagos, Nigeria. *African journal of business management*, 4(3), 299-307.
- [3] Asfandiyar, A. Y. (2009). *Kenapa guru harus Kreatif*. Jakarta: Mizan Media Utama.
- [4] Auger, P., & Woodman, R. W. (2016). Creativity and intrinsic motivation: Exploring a complex relationship. *The journal of applied behavioral science*, 52(3), 342-366.
- [5] Chughtai, A. A. (2013). Linking affective commitment to supervisor to work outcomes. *Journal of Managerial Psychology*.
- [6] Cooper, Donald R, & Pamela S. Schindler, (2006). *Business Research Methods*. Jakarta: PT Media Global Edukasi
- [7] Davis, K., & Newstrom, J. W. (1993). *Organizational behavior: Human behavior at work*. McGraw-Hill.
- [8] Fischer, C., Malycha, C. P., & Schafmann, E. (2019). The influence of intrinsic motivation and synergistic extrinsic motivators on creativity and innovation. *Frontiers in psychology*, 10, 137.
- [9] García-García, C., Chulvi, V., Royo, M., Gual, J., & Felip, F. (2019). Does the work environment affect designers' creativity during the creative phase depending on their personality profile?. *Thinking Skills and Creativity*, 33, 100578.
- [10] Ghozali, I. & Latan, H. (2015). *Partial Least Squares: Concepts, Techniques and Applications Using the SmartPLS 3.0 Program*. Semarang: Badan Penerbit Universitas Diponegoro
- [11] Gitosudarmo, I. (2000). *Marketing Management*, first edition. Yogyakarta: BPFE.
- [12] Govindarajulu, N., & Daily, B. F. (2004). *Motivating employees for environmental improvement*. Industrial management & data systems.
- [13] Haq, S., Muttaqijn, I., & Soeparto, S. (2022). The Influence of Work Discipline and Work Environment on Lecturer Job Satisfaction. *JMB: Jurnal Manajemen Dan Bisnis*, 11(1).
- [14] Hasanuddin, R., & Sjahrudin, H. (2017). The structure of emotional intelligence, spiritual intelligence and its relationship with work enthusiasm and auditor performance. *Structure*, 3(1), 67-85.
- [15] Higgins, M. C. (2001). Changing careers: The effects of social context. *Journal of Organizational Behavior: The International Journal of Industrial, Occupational and Organizational Psychology and Behavior*, 22(6), 595-618.
- [16] Hunter, S. T., Bedell, K. E., & Mumford, M. D. (2007). Climate for creativity: A quantitative review. *Creativity research journal*, 19(1), 69-90.
- [17] Jain, R., & Jain, C. (2016). Employee creativity: A conceptual framework. *Management and Labour Studies*, 41(4), 294-313.
- [18] Josiah, T. (2021). The Influence of Competence, Motivation, and Work Environment on the Performance of Lecturers of the Islamic Economics College (STES) Tunas Palapa Central Lampung. *Jurnal Ilmu Manajemen Saburai (JIMS)*, 7(1), 35-46.
- [19] Kanto, M., & Sjahrudin, H. (2020). How psychological capital mediates the relationship between thriving at work and happiness at work? A cross-sectional research for tourism sector of Indonesia. *PalArch's Journal of Archaeology of Egypt/Egyptology*, 17(6), 1798-1812.
- [20] Leach, G. C. (2020). *The influence of supervisory behaviour and the internal work environment on employee-driven innovation and creativity in an open distance e-Learning institution in South Africa* (Doctoral dissertation).
- [21] Madjar, N. (2008). Emotional and informational support from different sources and employee creativity. *Journal of Occupational and Organizational Psychology*, 81(1), 83-100.
- [22] Madjar, N., Oldham, G. R., & Pratt, M. G. (2002). There's no place like home? The contributions of work and nonwork creativity support to employees' creative performance. *Academy of Management journal*, 45(4), 757-767.

- [23] Moghimi, S., & Subramaniam, I. D. (2013). Employees' creative behavior: The role of organizational climate in Malaysian SMEs. *International Journal of Business and Management*, 8(5), 1.
- [24] Munandar, S.C Utami. (2002). *Creativity and giftedness Strategy Delivering Creative Potential and Talent*. Jakarta: Granada Pustaka Utama.
- [25] Ogbonna, E., & Harris, L. C. (2000). Leadership style, organizational culture and performance: empirical evidence from UK companies. *International Journal of human resource management*, 11(4), 766-788.
- [26] Oldham, G. R., & Cummings, A. (1996). Employee creativity: Personal and contextual factors at work. *Academy of management journal*, 39(3), 607-634.
- [27] Paramitha, A. (2012). The Mediation Role of Intrinsic Motivation on the Effect of Work Environment Support and Non-Work Environment Support on Employee Creativity. *Jurnal Ekonomi*, 25(2), 29.
- [28] Robbins, S. P., & Judge, T. A. (2011). *Organizational Behavior Global Edition*. Person Edition. Inc.
- [29] Saroh, S. (2021). Determinants of Lecturer Performance Levels with Interest in Work, Work Environment, and Work Spirit as Predictors at Simalungun University Pematang Siantar. *Kumpulan Karya Ilmiah Mahasiswa Fakultas Sosial Sains*, 1(01).
- [30] Sartika, N. D., & Khair, H. (2022). Pengaruh Lingkungan Kerja, Kepuasan Kerja Dan Organizational Citizenship Behavior Terhadap Kinerja Dosen. *Jesya (Jurnal Ekonomi dan Ekonomi Syariah)*, 5(2), 1335-1347.
- [31] Sedarmayanti. (2001). *Human Resources and Work Productivity..* Mandar Maju. Bandung.
- [32] Sedarmayanti. (2011). *ork Procedures and Work Productivity: An Overview of Ergonomics Aspects Or The Relationship Between Humans And Their Work Environment* Cetakan Ketiga. Bandung: Mandar Maju
- [33] Sedarmayanti.(2009). *Human Resources and Productivity. Work*. Bandung: CV. Mandar Maju.
- [34] Shalley, C. E., Zhou, J., & Oldham, G. R. (2004). The effects of personal and contextual characteristics on creativity: Where should we go from here?. *Journal of management*, 30(6), 933-958.
- [35] Shalley, C. E., Zhou, J., & Oldham, G. R. (2004). The effects of personal and contextual characteristics on creativity: Where should we go from here?. *Journal of management*, 30(6), 933-958.
- [36] Simonton, D. K. (2000). Creativity: Cognitive, personal, developmental, and social aspects. *American psychologist*, 55(1), 151.
- [37] Sumartono & Pudjo Sugito. (2004). *Operational Management* Malang: Banyumedia.
- [38] Sunyoto. (2012). *Humann Resources Management*. Jakarta: PT Buku. Seru
- [39] Tahir, R., & Athar, M. R. (2018). Impact of cooperative team environment and procedural justice on work environment creativity: An empirical study of banking industry. *International Journal of Business and Administrative Studies*, 4(5), 224-231.
- [40] Unsworth, K. (2001). Unpacking creativity. *Academy of management review*, 26(2), 289-297.
- [41] Wantoyo, S., & Remiasa, M. (2022). The Influence of Physical and Non-Physical Work Environments on Employee Performance through Employee Creativity as a mediating variable at the Gold Shop at Pasar Atom Surabaya. *Agora*, 10(1).
- [42] Widhiastana, N. D., Wardana, M., & Sudibya, I. G. A. (2017). The Effect of Work Environment and Rewards on Employee Creativity and Performance at Ganesha University of Education. *E-Jurnal Ekonomi dan Bisnis Universitas Udayana*, 6(1), 223-250.
- [43] Wursanto. (2009). *Organizational Science Fundamentals*. Yogyakarta: Andi
- [44] Zhou, J., & Shalley, C. E. (2003). Research on employee creativity: A critical review and directions for future research. *Research in personnel and human resources management*.