Information System and Motivation Determinants of Lecturer Research Performance: Perception of Lecturers at the Semarang Polytechnic

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Abstract

The research performance of midwifery lecturers is an important assessment. The purpose of the study was to determine the influence of information systems, good university governance, supervisors, and motivation on performance. Semarang Polytechnic is the largest polytechnic in Indonesia consisting of Semarang, Kendal, Purwokerto, Magelang, and Blora campuses. Google Form questionnaire data collection. Data analysis with multiple linear regression research variables information systems, Good University Governance, Supervision and Motivation, and Kinrja. The results of the study showed that governance, supervision, and motivation affected research performance. Information systems partially do not affect the performance of the study. At the same time, the information system, Good University governance, supervision, and motivation simultaneously affect the research performance factors of research lecturers contribute to the literature on the research performance of lecturers in the midwifery department as a consideration for the director to take a policy on the research performance of lecturers Polytechnic Leadership must create an information system g easy to use, complete, and connected one lecturer performance report makes it easier for lecturers to prepare administration of research reports so that they are motivated to conduct quality research.

Keywords: *Information Systems. Motivation, Lecturer, Midwifery.*

Introduction

The Semarang Polytechnic is part of a health education institution in Central Java where there is interaction between leaders and lecturers. One of the interactions built is the delegation of the ability to use the budget to conduct research based on a research contract that has been signed by both the research manager and the lecturer. The relationship that occurs between leaders and lecturers uses the Agent Theory approach, so the leader acts as a principal to delegate authority to researchers through contracts as agents.

The delegation of authority is related to the effectiveness of managing lecturers' research performance and preventing the occurrence of information asymmetry that is very detrimental to the principal. In carrying out research, the Principal needs to supervise the agent so that he acts according to the goals set by the principal. Supervision with good governance will make it easier for agents to carry out contracts. Research conducted by lecturers as agents and researchers needs to adjust the governance and agreements contained in the knack so that the existing supervision is also related to the implementation of research in the form of mentoring and monitoring activities. The perception of principals and agents needs to be equated in this area through wider exploration, both external factors including information systems, governance, and supervision as well as intrinsic factors in the form of motivation. This research will explore the perception of lecturers in conducting research performance and its implications for the leadership of the Semarang Polytechnic.

Data collection is carried out directly to collect data and the literature review will build a theoretical framework that explains the important role of information systems and motivation in carrying out lecturer research performance. This research is based on literature and data analysis with the aim of:

Understanding the factors that affect the performance of lecturers conducting research from the factors of information system utilization, the implementation of Good University Governance, supervision, and motivation of lecturers in conducting effective research.

For the exploration of the relationship between each factor that affects the performance of lecturers in

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conducting this research with a quantitative approach with data analysis using multiple linear regression conducted on lecturers at the Department of Midwifery of the Semarang Polytechnic from October to November 2023, it is possible to gain insight into how the lecturer's perception of conducting research at that time. This research will contribute to academic discussions about factors that affect lecturers' research performance and offer practical insights for leaders at the Semarang Polytechnic in regulating the implementation of research contracts. The purpose of this study is to provide novelty in describing information system factors, Good University Governance, supervision, and motivation affecting lecturers' research performance.

Literature Review

Sistem Informasi

To support the implementation of research activities, the information system used in conducting research is a determinant of information conveyed in its entirety. Information systems that change and are still in the development phase will provide gaps for inconsistencies in the input reports and data imperfections that cause incomplete data and provide different meanings for leaders in assessing lecturers' performance in conducting research. Empirical evidence that supports the importance of information systems to support performance among others: Information systems are important to measure performance assessments by the activity items set out in the lecturer's credit score(Fauziah & Retnoningsih, 2020). The information system will be useful if it is accurate, can be used in a timely and relevant manner, and can be corrected immediately to avoid mistakes in decision-making on the results displayed(Aswiputri et al., 2022).

This finding is consistent with previous research related to the use of information systems on employee performance. According to the results of the study, the design of the information system is different between manual and digital, especially in the use of features in the digital system to avoid human error, inaccurate data, and lack of real-time(Joni & Sandika, 2016)According to research, the use of information systems in compiling research activity reports is carried out with a computer-based management solution and the research database is a parameter for assessing the performance of lecturers in conducting research (Setiaji et al., 2011) Some institutions do not yet have a web-based lecturer research information system and are developing programming, especially research databases that are easy and fast to use(Widaningrum, 2016).Belum banyak dijumpai sistem informasi yang berhubunga dengan kinerja penelitian dosen diluar penelitian ini. banyak asumsi sistem informasi dengan metode digital hanya akan menyulitkan pengguna karena terbiasa menggunakan manual.Beberapa orang masih merasa kesulitan dalam meggunakan sistem informasi manajemen terhadap kinerja akademik di Universitas Gorotalo(Koniyo, 2011)The use of information technology that appropriately records and processes research data needs to be improved (Sutedi & Agarina, 2019).

 The importance of the information system in collecting data on the implementation of research performance and publication of research results carried out at the Khujand Polytechnic Institute, Tajik Technical University (KPITTU) The information system ensures that management becomes more effective and transparent in seeing the results of lecturer performance including information storage, access is regulated to save costs rather than using manual methods and provides convenience for institution leaders to analyze and determine efficiency with automation system(Maqsudov et al., 2020). The ability and performance of lecturers to carry out the tri dharma of higher education include research following the vision and mission of the goals that have been set and obtaining information on the productivity of lecturers' performance in the field of productive research in the field of research and teaching(Wahab et al., 2021).

 The effectiveness of information systems and their relevance to lecturers' research performance have been studied extensively in the literature. Information system research that directly assesses the effectiveness of the use of data management and decision-making by delegating authority is still small.

Good Universiti Governance

Good University Governance (GUG) is a concept that emerged from the awareness that the implementation of higher education and higher education institutions cannot be equated with the implementation of a state or corporation. What distinguishes them is the noble values of education that must be maintained in its implementation. The principles of accountability and transparency are the basic principles to bring a university towards Good University Governance (GUG)(States et al., 2009) The management of a university cannot be equated with the management of a country or corporation. Certain corridors are closely related to values that must be maintained both in terms of social values and academic terms. This is also what encourages the emergence of the idea of Good University Governance (GUG) in the implementation of higher education institutions by adopting the principles contained in corporate governance with various adjustments such as transparency, accountability, accountability, independence, fairness, and equality. The application and implementation of GUG principles are expected to support the performance of a university as a whole such as the performance of academic service quality, student performance, research performance, and human resource performance of higher education(Ritonga et al., 2021)

Pengawasan kegiatan penelitian dosen

Supervision has a strong and significant influence on Performance (Rosmiati, 2017) Discipline supervision and motivation have a positive and significant influence on teacher performance. (Rivai Ahmad, 2021) Work supervision also has a significant influence on employee performance(Ilmiah & Rachmawati, 2024)

motivasi dosen melakukan penelitian

Lecturers' motivation in conducting research includes job promotions, increased income, and awards for lecturers. Research performance is still carried out with strong motivation so that when facing obstacles continue to conduct research Motivation for work has an effect on research supported by a supportive work environment (Frastika & Franksiska, 2021) The motivation of lecturers to conduct research can be based on a love for Polttek or a desire to get a functional position (Frastika & Franksiska, 2021)Intrinsic motivation facilitated social relationships, compensation and autonomy (Wilkesmann & J. Schmid, 2014)Leadership competence and motivation in performance (Lesmana & Nasution, 2020).

Longitudinal information systems support innovation and research performance (González-Sancho & Vincent-Lancrin, 2016) Information systems related to the use of commuters can help in the preparation of conference proceedings of research results (Becker, 2018). Various information systems have advantages and disadvantages(Lawi & Panggabean, 2021) Information technology systems affect performance (Fahmi et al., 2020)

H1: There is a positive relationship between information systems and lecturers' research performance

The principles of GUG that are applied more optimally and consistently in higher education, show the difference in performance levels that are better and superior to other universities. So it can be concluded that the application of good university governance principles affects the performance of universities.(Ritonga et al., 2021) The application of GUG in Jayapura city universities is included in the criteria of "High"(Larasati et al., 2018) that there is a positive and significant simultaneous influence between GUG and the use of IT on university performance partially seen that there is a positive and significant influence between GUG and university performance (Ritonga, 2018) The findings of the study provide empirical evidence that good university governance affects higher education performance. Therefore, universities must implement good university governance to improve their performance.(Machmuddah & Suhartono, 2019) An interpretive analysis of the data showed that, from a student's perspective, the combination of lecturers' course knowledge, willingness to help and inspiring teaching methods made good university lecturers. Being humorous and being able to provide quick feedback is also considered an important factor. These findings have several important implications for academic practice(Su & Wood, 2012)

H2: There is a positive relationship between Good University Governance and lecturer research performance

The supervision carried out increases professionalism and improves performance (Ratmawati et al., 2017)Supervision is related to achievement and performance if it is carried out periodically and in a structured manner (Nwosu et al., 2021)Contract-based supervision delivers performance-improving results (Herman et al., 2023)

H3: There is a positive relationship between supervision and lecturer research performance

Lecturers' motivation to conduct research that affects innovative performance can be done interdisciplinary and emotional clarity as a solution to limited abilities that cause stress can be developed to be used in the learning process(Čábelková et al., 2022). Motivation has a positive and significant influence on performance(Sinaga & Sinulingga, 2018)

H4: There is a positive relationship between lecturer motivation and research performance

Performance research lecturers conduct research adopting the relationship between principals and agents in research activities. Factors that affect research performance include competence, organizational commitment, type of leadership, and lecturer motivation affect lecturer research performance, (Lesmana & Nasution, 2020). Applications in information systems can make it easier to assess lecturers' research performance. (Zoromi, 2018). Supervision carried out academically includes the planning, socialization of explanations, implementation, observation, and follow-up stages (Rusdiman AB et al., 2022)Psychological contracts can inhibit dose performance (Aluko et al., 2022)Information Management Practice and Innovation Performance Impact on Financial Performance (Altındağ & Öngel, 2021)Supervisors who are structured and well-connected affect performance (Nwosu et al., 2021) the control system internally affects information and GUG and affects the performance of (Ahmad et al., 2020).

H5: There is a simultaneous influence between the information system, Good University Governance, and supervision on the research performance of lecturers with the following framework model:
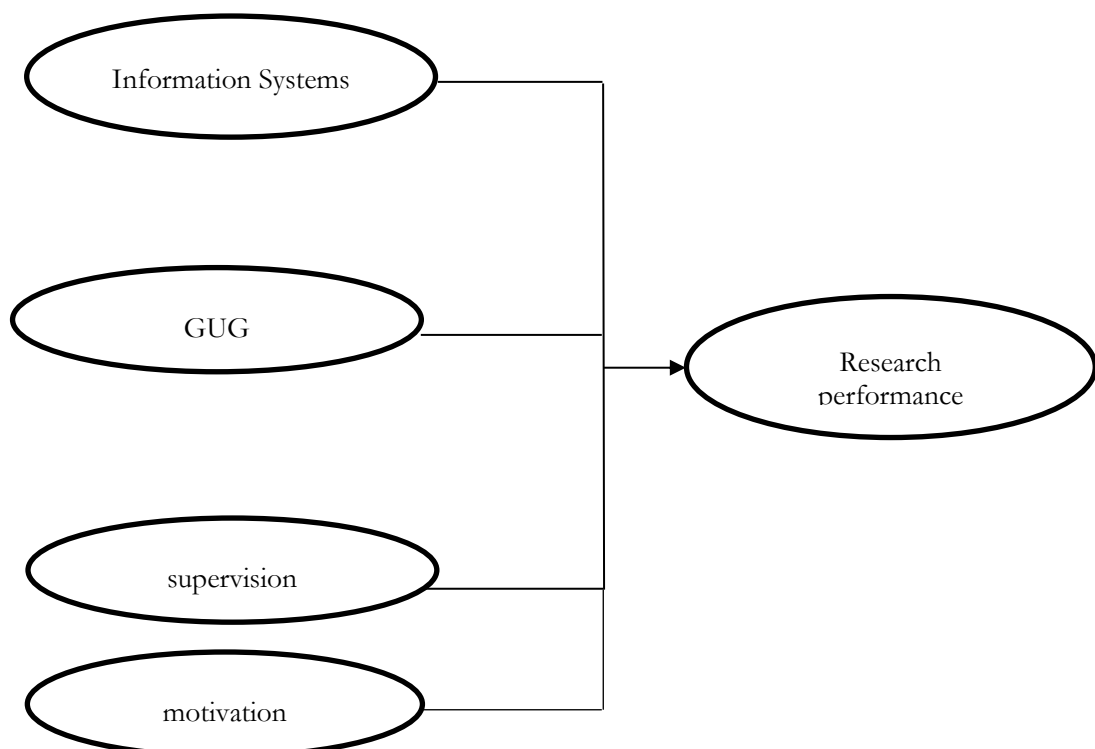
Chart 1 Conceptual framework

Research Design

This research is designed by discussing the research objectives and discussing the results of the assessments collected. The activity began with the preparation of a research design, a data collection tool based on the type of data, conducting validity and reliability tests, and distributing questionnaires in the form of Google Forms, then analyzing and making reports. The location of the research is at the Department of Midwifery at the Semarang Polytechnic from October to November 2023. The approach chosen in this study is quantitative research to decrypt the findings related to factors related to the lecturer's research performance. The research proposal is that all lecturers and education staff in the midwifery department are 82 people. The method used is a survey making all populations as a sample of 82 people. The relationship between the research variables is as follows:

 Information systems in managing research data: digital information systems are important in lecturers' research performance, but there are still differences in use from manual-based to website-based. An effective information system can improve the performance of more significant and positive research

Good University Governance in managing lecturer research: Good University Governance is used to set research performance standards. Positive correlation between the Implementation of Good University Governance and producing lecturer research performance.

Supervision of research implementation: Supervision of research activities concerning research contracts, If there are problems with the implementation of research contracts, assistance and supervision can be provided starting from proposals to publications.

Lecturer motivation in conducting research: Motivation is an internal factor of the lecturer who conducts research that affects research performance. If the motivation increases, the quality of lecturers' research increases.

Information systems, Good University Governance, supervision, and motivation affect research performance: external factors consist of information systems, Good University Governance, and supervision of internal factors from lecturer motivation affect lecturer research performance.

Analysis Regresi

Multiple linear regression relates dependent variables to independent variables in the research model to determine whether independent variables of dependent variables have an effect. Multiple linear regression analysis is used to obtain the regression coefficients that will be used to study the empirical model.

Results and Discussions

Descriptive Analysis

The descriptive data results for the first category include location parameters such as averages, which are used to illustrate data trends. This parameter provides information about the location of the sample center or most of the sample. The descriptive test includes information systems, supervisory GUG, and motivation which shows the average value of the observations collected.

Table 1 Descriptive Statistics

	Mean	Std. Deviation	N
KINERJA	17.0122	1.97199	82
SISTEM INFORMASI	38.6829	3.64769	82
GUG	100.2927	11.51862	82

PENGAWASAN	45.0122	7.13796	82
MOTIVASI	107.0732	11.56280	82

The second category consists of dispersion measures, it is explained in detail that the results of the study are seen from the extent to which the values of the variables in the sample deviate from each other. Based on Table 1, the most Mean was obtained in GUG, the standard deviation in motivation was 11,562, and From 500 observations collected in this study, it showed the largest Variance of motivation of 5,000 in the Department of Midwifery of the Semarang Polytechnic.
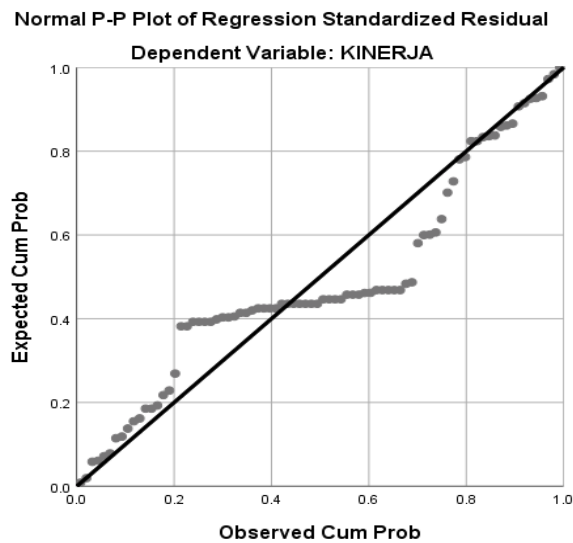
Plot probability normality test

Normal P-P Plot of Regression Standardized Residual
Dependent Variable: KINERJA

Figure 1 Data normality test

In the figure, the data appears to be spread around the diagonal line and spread in the direction of the diagonal line. A conclusion that the research data is normally distributed

Kolmogorof smirnov normality test

Table 2 Uii data normality

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		82
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	1.59882097
Most Extreme Differences	Absolute	.208
	Positive	.208
	Negative	-.172
Test Statistic		.208
Asymp. Sig. (2-tailed)		.200[c]
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		

Based on the results of the normality test, it is known that the significance value is 0.200 > 0.05, then the conclusion is that the residual value is normally distributed.

Multicollinearity Tolerance and VIF Test
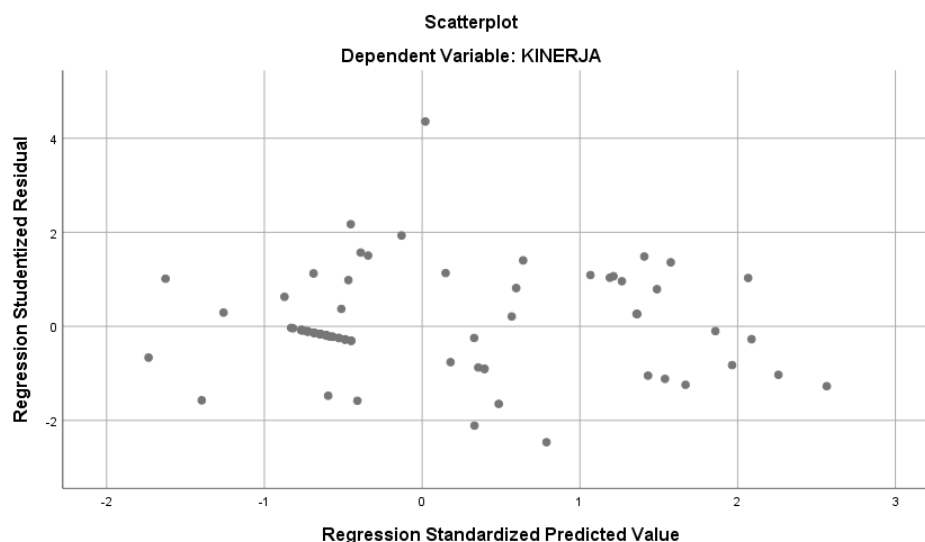
Tabel 3 Multicollinearity Test

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	12.665	2.472		5.123	.000		
	SISTEM INFORMASI	-.045	.055	-.084	-.818	.416	.813	1.230
	GUG	.096	.025	.559	3.754	.000	.385	2.596
	PENGAWASAN	-.260	.050	-.940	-5.151	.000	.256	3.901
	MOTIVASI	.077	.035	.449	2.172	.033	.200	5.000

a. Dependent Variable: KINERJA

If the tolerance value is> 0.100 and the VIF value < 10.00, then there are no symptoms of multicollinearity. Conclusion: There are no symptoms of multicollinearity. The VIF in this study uses a VIF value above 10. Based on the results of the study, the VIF value for Information Systems is 1,230, GUG is 2,596, Supervision is 3,901 and Motivaso is 5,000. All variables have VIF values < 10 conclusions that can be drawn are that the sample does not have multicollinearity and assumptions are achieved.   A tolerance value is used, less than 0.10 indicates the possibility of multicollinearity. Based on the findings, the tolerance value for each variable is below 0.10, the tolerance value of the Information System is 0.813, the GUG is 0.385 Supervision 0. 256, and Motivation 0.200 can be expressed as multicollinearity, and assumptions are achieved in this study.

Homoskedastikitas

There is no heteroscedasticity if there is no clear pattern (wavy, widening, then narrowing) in the scatterplots and the dots are spread above and below the number 0 on the Y-axis. If the variation of one observation to another observation is still called homoscedasticity, for good regression analysis, Heteroskesdastisitas does not occur because the cross-section data has data that represents small, medium, and large sizes using the scatterplot diagram method.

Figure 2 Homoskedalitisity test

Based on Figure 2, it can be seen that the results of the Homoskedasticity test show a consistent spread around the number 0 indicating linearity. This shows that there are no symptoms of heteroscedasticity.

Heteroscedasticity test with Glejser

Table 4 UJi heteroskedasticity with Glejser
Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	2.391	1.631		1.466	.147		
	Information Systems	-.054	.037	-.170	-1.475	.144	.813	1.230
	Gug	.058	.017	.581	3.464	.101	.385	2.596
	Supervision	-.045	.033	-.280	-1.360	.178	.256	3.901
	Motivation	-.028	.023	-.282	-1.210	.230	.200	5.000

a. Dependent Variable: RES2

Variable	Sig.	Conclusion
X1 (Information Systems)	0,144	No heteroscedasticity occurs
X2 (Gug)	0,101	No heteroscedasticity occurs
X3 (Supervision)	0,178	No heteroscedasticity occurs
X4 (Motivation)	0,230	No heteroscedasticity occurs

Based on the data in the table, it was obtained that all independent variables did not have heteroscedasticity

Durbin waston autocorrelation test

If the Durbin Watson value lies between du- to (4-du) The du value is found in the distribution of the Durbin Watson table based on k (4) and N (82) with a significance of 5%.

Table 5. Durbin waston autocorrelation test

ANOVAa

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	107.933	4	26.983	10.035	.000b
	Residual	207.055	77	2.689		
	Total	314.988	81			

A. Dependent Variable: Performance

B. Predictors: (Constant), Motivation, Information Systems, Gug, Supervision

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.585a	.343	.309	1.63982	2.227

a. Predictors: (Constant), MOTIVASI, SISTEM INFORMASI, GUG, PENGAWASAN

b. Dependent Variable: KINERJA

du (1,743) < Durbin Watson (2,227) < 4-du (2,257), kesimpulan tidak ada gejala autokorelasi.

Multiple Linear Regression Analysis

The data analysis technique in this study is to answer the research objective by using multiple linear analysis with the help of SPSS For Windows release 25.0 If the Sig value < 0.05, then the independent variable (X) partially affects the dependent variable (Y).

Table 6 Partial T-Test Multiple Linear Regression

	Coefficients							
		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
Model		B	Std. Error	Beta	T	Sig.	Tolerance	VIF
1	(Constant)	12.665	2.472		5.123	.000		
	Information Systems	-.045	.055	-.084	-.818	.416	.813	1.230
	Gug	.096	.025	.559	3.754	.000	.385	2.596
	Supervision	-.260	.050	-.940	-5.151	.000	.256	3.901
	Motivation	.077	.035	.449	2.172	.033	.200	5.000

a. Dependent Variable: PERFORMANCE

Based on the analysis of the data, the regression equation can be determined as follows:

$$Y = a + bx1 + bx2 + bx3 + bx4 + e$$

$$Y = 12.665 + 0.416x1 + 0, 096x2 + 0.260x3 + 0.077x4 + e$$

From the results of the analysis of the table, the positive constant is 12.665, meaning that all variables X1 and X4 are worth 0 and variable Y is worth 12.665

The information system (x1) variable coefficient x1 is -0.416, meaning that if there is an increase in X1 by 1 unit, it will cause a decrease in the Y variable by 0.416 units. A negative value coefficient means that the direction of the relationship between variable X1 and variable Y is in the opposite direction. Where if X1 goes up, the Y variable goes down. This means that the more variable X1 is, the lower the Variation Y and vice versa.

GUG (x2) Koefeisien, the regression of the X2 variable is 0.096, which means that if there is an increase in X2 by 1 unit, it will cause an increase in the Y variable by 0.096 units. A positive value coefficient means that the direction of the relationship between variable X1 and variable Y is unidirectional. Where if X2 goes up, the variable Y goes up. This means that the more variable X1 is, the lower the Variation Y and vice versa.

Supervision (X3) of the variable coefficient x3 of -0.260 means that if there is an increase in X3 by 1 unit, it will cause a decrease in the Y variable by 0.260 units. A negative value coefficient means that the direction of the relationship of the variable X3 to the variable Y is in the opposite direction. Where if X3 goes up, the Y variable goes down. This means that the higher the variable x3, the lower the Variable Y and vice versa.

Motivation (X4) Koefeisien regression of the X4 variable of 0.077 means that if there is an increase in X4 by 1 unit, it will cause an increase in the Y variable by 0.077 units. A positive value coefficient means that the direction of the relationship between variable X4 and variable Y is unidirectional. Where if x4 goes up, the variable Y goes up. This means that the more variable X4 is, the lower the Variation.

Simultaneous influence significance test (F TEST)

The F statistical test based on the data of all independent variables has a joint effect on the bound variables. The F test measures the ability of independent variables of information system (X1), GUG (X2), Supervision (X3), and Motivation (X4) to explain the dependent variable, namely performance (Y).

Table 7 Test Results F

ANOVAᵃ					
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	107.933	4	26.983	10.035	.000ᵇ
	Residual	207.055	77	2.689		
	Total	314.988	81			
A. Dependent Variable: Performance						
B. Predictors: (Constant), Motivation, Information Systems, Gug, Supervision						

Based on the results of data processing in the table, the F value is calculated at 10,035 with a significance value of 0.000. The results of data processing showed that Information Systems (X1), GUG (X2), Supervision (X3), and Motivation (X4) simultaneously affected Performance (Y) with a sig. 0.000 < 0.05

UJi T partial multiple linear regression

The t-statistical test in this study can be seen in the value of the t-statistical probability. The statistical test t was carried out to show how the system of incorporation (X1), GUG (X2), supervision (X3), and motivation (X4) together (simultaneously) had a significant influence on the lecturer's research performance (Y). If the t-statistic probability value is greater than the significance level $\alpha = 0.05$ or 5%, then partially the independent variable has no significant effect on the dependent variable. On the other hand, if the t-statistic probability value is less than the significance level of $\alpha = 0.05$ or 5%, then partially the independent variable has a significant effect on the dependent variable.

Table 8 T Test Multiple Linear Regression
Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	12.665	2.472		5.123	.000
	Information Systems	-.045	.055	-.084	-.818	.416
	Gug	.096	.025	.559	3.754	.000
	Supervision	-.260	.050	-.940	-5.151	.000
	Motivation	.077	.035	.449	2.172	.033
a. Dependent Variable: Performance						

The following will be partially explained information systems (X1), GUG (X2), supervision (X3), and motivation (X4) on lecturer research performance (Y):

Based on the t-test table above, the influence of the information system variable (X1) on the Employee Performance variable (Y) is 0.416 > 0.050 where Ho is accepted, which means that there is no influence of the variable of information system mastery (X1) on the research performance variable (Y).

Based on the t-test table above, the influence of the GUG variable (X2) on the Performance variable research (Y) of 0.00 < 0.050 where Ho was rejected and the hypothesis was accepted, which means that there is an influence of the Motivation variable (X2) on the Employee Performance Variable (Y).

Based on the t-test table above, the influence of the supervision variable (X3) on the Performance variable research (Y). 0.000 < 0.050 where Ho is rejected and the hypothesis is accepted, which means that there is an influence of the supervision variable (X3) on the research performance variable (Y).

Based on the t-test table above, the influence of the motivation variable (X4) on the Performance variable research (Y). 0.033 < 0.050 Ho was rejected and the hypothesis was accepted which means that there was an influence of the motivation variable (X4) on the research performance variable (Y)

Table 7 Simultaneous Tests

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	
1	.585a	.343	.309	1.63982	
a. Predictors: (Constant), Motivation, Information Systems, Gug, Supervision					
b. Dependent Variable: PERFORMANCE					

From Table 7, it can be seen that the R Square value is 0.343 or 34.3%. The figure shows the influence of variables X1 to X4 on Variable Y combined, while the remaining 75.7% explained by other factors that have not been researched in this study.

The influence of information systems on research performance

The results of multiple regression analysis showed that the information system had a significant and significant influence on research performance at the Department of Midwifery, Semarang Polytechnic, This shows that the good application of the information system will reduce the research performance of lecturers. This condition is due to the change in the method of the information system from manual to digital so it is necessary to socialize, assist, and refine the information system used. Information systems are useful for managing data, and channeling important information as the basis for performance-related decision-making (Falisha, 2022)Web-based information systems need to be developed to facilitate access for lecturers, process data monitoring, and evaluate lecturer performance(Agus Winarto, 2018)Information systems can be used for policymakers and internal supervisors concerning performance.

The Influence of Good University Governance on Research Performance

The results of the multiple regression analysis obtained by GUG have a positive and significant influence on research performance at the Department of Midwifery of the Semarang Polytechnic, This shows that the good idea of the implementation of GUG will improve the research performance of lecturers. The implementation of GUG emphasizes the noble values of education that must be maintained in its implementation. The principles of accountability and transparency are the basic principles to bring a university towards Good University Governance (GUG), Transparency means the availability of accurate, relevant, and easy-to-understand information that can be obtained in a low-cost way so that stakeholders can make the right decisions. (States et al., 2009). Law No. 12 of 2012 contains five basic principles of higher education management. These principles are stated in article 63, these principles are (1) accountability, which is the ability to take responsibility for what is done; (2) transparency, which is openness in providing information; (3) non-profit, which does not mean that here it is looking for profits but reinvestment for capacity addition; (4) quality assurance, which means confidence in providing good service; (5) Effectiveness and efficiency, (Meidelfi et al., 2020) adjusted to the utilization of available human resources (Lieharyani, 2018). All GUG principles can improve lecturers' research performance. Good university governance affects performance(Hidayat, 2023).

The effect of supervision on performance

The results of multiple regression analysis showed that supervision had a significant and significant

influence on research performance at the Department of Midwifery, Semarang Polytechnics, this condition is possible because the supervision of research performance is only carried out 2 times during the progress report and final research report so that lecturers feel that they are not enough to get assistance outside of that time. Supervision of research Supervision is the process of activities to supervise in the workplace assessed socially, psychologically, and physically. Supervision must follow the objectives, vision, and mission of the educational institution related to the performance of (Rudy, 2020). work supervision to ensure the quantity and quality of work based on established standards to prevent behavioral deviations and encourage timely completion of tasks(ilmiah & rachmawati, 2024)

The influence of motivation on performance

The results of multiple regression analysis showed that motivation had a positive and significant influence on research performance at the Department of Midwifery of the Semarang Polytechnic, This shows that the application of motivation will improve the research performance of lecturers. Motivation is centered on 3 forms of needs, namely the need for achievement, the need for power, and the need for scholarship (juniwati et al., 2023). Lecturers' motivation when conducting research can be influenced by the feeling of pleasure in research activities, developing science, and tasks that are the policy of the institution supported by a good work environment. (kosasih, 2012). The influence of information systems, GUG, Supervision, and motivation on research performance The results of multiple regression analysis obtained that information systems, GUG, supervision, and motivation have a positive and significant influence on research performance in the Department of Midwifery, Semarang Polytechnics, This shows that the application of information systems, GUG, supervision, and motivation will improve the research performance of lecturers. (Interdonato, 2023). The higher the implementation of Good University Governance, the higher the competitive advantage mediated by Intellectual Capital. This implies that the high implementation of Good University Governance in a private university will increase competitive advantage supported by the strong role of lecturers, staff/employees, students, and stakeholder management support. (Ayu et al., 2020). External factors of human resources and social and economic governance influence performance (Dwianto et al., 2024). Regulations that have been set need to be periodically adjusted to get maximum impact (Fauzi et al., 2024). Motivation as an intrinsic value is very important to achieve maximum research performance in addition to consideration of funds and experience (Ceyhan & Tillotson, 2020). Motivation including motivation, values, and interests in oneself can activate behavior to achieve performance (Solar et al., 2019). Lecturers in the Department of Midwifery 99% of Women's Gender views can affect motivation to achieve. Awareness of gender equality provides opportunities for women to get maximum performance results. (Pal, 2024)The achievement of lecturer research performance productivity is influenced by individual factors of lecturers and policies and leaders(Tuan et al., 2022) The principle of supervision that can improve performance is timely, effective, and consistent supervision. The link between motivation and supervisor in the organization increases motivation and high performance (Ilmiah & Rachmawati, 2024) Research performance The research performance of lecturers can be assessed based on the quantity of research, the quality of researchers, the funds used, and the timeliness of implementation (Kurniati & Fidowaty, 2017). Lecturer performance is assessed in a certain period by comparing targets and achievements that are influenced by knowledge, problem-solving skills, which is an encouragement to fulfill lecturer competencies.(Kusdibyo, 2021).

Conclusion

The analysis that has been carried out in this study is to analyze the factors that affect the research performance of lecturers in the Department of Midwifery, Semarang Polytechnic. This study measures the relationship between information systems, GUG, supervision, and motivation to lecturers' research performance. Based on the literature review, a strong basis was obtained to assess the performance of lecturers in conducting research based on the principle of delegation of authority with control in the form of supervision during research activities so that the goals of the Semarang Polytechnic were achieved.

The literature review is a strong basis for to use of agency theory by highlighting the difference in perception between principal and agent that causes agency problems. (Sulistiani, 2016) The results of the

study are in line with research that states that performance is influenced by motivation and supervision (Ilmiah & Rachmawati, 2024)   Good university Governance affects lecturer performance (Hidayat, 2023)In addition, although less explored in the existing literature, the study found that information systems did not affect research performance. The relatively new information system with improved features and processes has caused lecturers to be reluctant to use the latest applications and choose to become research members who are not obliged to enter and report activities according to the research contract. Research is in line with research that information systems do not affect lecturer performance (Hutasuhut & Palahi, 2021) Manual information systems need to be abandoned and replaced with digital systems that make it easier for leaders to determine policies and assess lecturer performance(Meidelfi et al., 2020).

In the development of the hypothesis, the influence of the information system, GUG. Supervision, and motivation, The results of this study have described the influence of information systems, GUG, supervision, and motivation on effective lecturer research performance. The hypothesis that is determined is useful as a guide for conducting data analysis to clarify how factors that affect performance can contribute to explaining factors that affect lecturer research performance. The results of the study reinforce that GUG, supervision, and motivation are variables that affect lecturers' research performance. Governance with GUG provides the ability of lecturers to conduct research freely and responsibly and achieve the specified targets, while supervision of the implementation of research that is regulated regularly provides the possibility of immediate action if there are obstacles in the implementation of research.

The variation of factors that affect performance is based on differences in lecturer qualifications, age, and experience in conducting research and compiling research reports and publications. The principle of the research is an activity to conduct a deeper review and apply it as teaching material for lecturers in lectures. The results of the lecturer's research will be beneficial to the community if it can be transformed into the community through community service activities. The research conducted by lecturers is a performance determined by the government through the Teacher and Lecturer Law related to promotions and career paths that can be achieved by lecturers. The magnitude of the difference in lecturers' perceptions regarding the use of facilities in the form of information systems and supervision and good management affects the performance of lecturers conducting research. From the internal factors of lecturer motivation related to lecturer research performance. With high motivation, lecturers will increase the motivation of lecturers to conduct research. The results of this study have been presented and discussed based on the results of literature review research and discussion by connecting the factors of the deceased. This research provides a useful knowledge offer for leaders to manage lecturers' research performance. The Semarang Health Polytechnic can take advantage of the results of this research by implementing a balanced agency relationship and avoiding conflicts of interest and the emergence of information asymmetry. Quality research performance will improve the position of the Institution.

Confession

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