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Digital-Based Database Governance Development Management with Master Data Management UIN K.H. Abdurrahman Wahid Pekalongan

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ABSTRACT

Academic and Student Service Management (AKMA) expects that there will be an information system data management that can be accessed by all parties. The research aims to analyze the influence of database governance development management and digitization on master data management. The research design is a positivistic quantitative descriptive approach with multiple regression analysis. The research population is all Lecturers, Students, AKMA Sections, UTIPD Sections, and LPPM. The sampling technique is the percentage of cluster random sampling. Research results the effect of database governance on master data management is 93%, and the effect is positive and significant. The effect of digitalization on master data management is 52.8%, the effect is positive and significant. The regression equation Y=0.930X1+0.528X2 with R2=0.875. Suggestion: AKMA can properly apply a digital-based database governance development management system with master data management.

Introduction

AKMA University is part of a unit of UIN K.H Abdurrahman Wahid Pekalongan under the Bureau of General Administration of Academic and Student Affairs which has the main task of providing academic and student administration services as well as processing and analyzing data/information systems that are real-time, updated, accurate, in internet-based digital form and can be accessed by all interested parties and as one of the basis for decision making by the authorities. There are problems in the information system and database, namely: (1) AKMA data is not synchronized between data at University AKMA, Faculty AKMA, Finance, and PDDIKTI; (2) not well integrated and socialized massively; (3) data that is fragmented and cannot be accessed directly by interested parties, hindering the academic administration process. AKMA University held a Focus Group Discussion (FGD) for all interested parties, both directly and indirectly with AKMA University from internal and external campuses.

The entire series of analysis processes turned into a research innovation conducted by the University AKMA team with the title "Digital-Based Database Governance Development Management with Master Data Management at UIN. K.H Abdurrahman Wahid Pekalongan."

Research (Suti et al., 2020)with the results of research that the university governance system in the information and digitalization era was successful, starting with the preparation of vision, mission, and strategic plans with stakeholders. The higher education governance system must also pay attention to GUG principles in reducing the risk of errors in its management.

(Kurniadi & Mulyani, 2016) with research results: the implementation of Terminal Information System development can improve the function of higher education academic services to students easily, quickly, effectively, and efficiently. Alignment with (Stmik & Riau, 2015) examined the success of the Academic Information System (SIAKAD) for Data and Information Management Complexity Solutions in Higher Education. The study results show that according to institutional management, all variables together have a significant effect on variable Y of 71.35%. According to the lecturer, it has a significant effect with a contribution of 77.5%, and according to students, it has a significant effect of 83.0% (Etin Indrayani, 2011).

The expected governance must be realized in stages, planned and programmed with a clear time frame starting from the governance of quality assurance, governance of functional aspects including financial governance, and governance of information and digitalization.

Research Methods

This research uses a quantitative descriptive research approach. The population in this study were all Lecturers, Students, AKMA Sections, UTIPD Sections, and LPPM. This research is included as a sample because the total population is more than 30 people or more than 100 people or a total of 12,443 people. The sample size in this study was calculated using Harry King's Nomogram Krecjie table. The number of samples is 373 people.

The sampling technique is cluster sampling or multi-stage sampling. The dependent variable in this study is Master Data Management (Y). The independent variable in this study consists of Database Governance (X1). And Digitization (X2). Data collection techniques use data sources (primary and secondary), questionnaires, interviews, literature studies, and research instruments. Data analysis technique with multiple linear regression.

Findings

The findings in this study are presented based on the research objectives, namely: (1) the influence of database governance development management on master data management at UIN K.H Abdurrahman Wahid Pekalongan; (2) the effect of digitization on master data management at UIN K.H Abdurrahman Wahid Pekalongan; (3) the influence of digital-based database governance development management on master data management at UIN K.H Abdurrahman Wahid Pekalongan.

Reliability Test and Validity Test

Table 1. Reliability Test

Variable	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Database governance	.743	.738	11
Digitization	.870	.870	10
Master data management	.857	.861	5

Source: Processed primary data, 2023

Table 1. Shows the reliability test results displayed in the SPSS output are presented in Table 1. It shows that the database governance construct gives a Cronbach Alpha value of 0.743 or 74.3%, the digitization construct gives a Cronbach Alpha value of 0.870 or 87.0%, and the master data construct management gives a Cronbach Alpha value of 0.857 or 85.7%. From these results, it can be said that each construct is reliable because it is greater than 0.6.

The validity test was carried out using the SPSS program and to test the indicators of the research variables it was carried out using the product moment formula. Each item was declared valid if the r count was greater than the r table for n = 373 and the significance level (α) was 5%, 0.0868. If the correlation value is greater than 0.0868 then the indicator is valid. The test results are briefly presented in Table 2,3,4 below:

Table 2. Test the Validity of Database Governance Variables

Indicator Variables	r count	r table	Description
Good University Governance (GUG)	0,800	0,0868	Valid
Data storage, Retrieval & Update	0,531	0,0868	Valid
A useraccessible	0,751	0,0868	Valid
Transaction Support	0,802	0,0868	Valid
Concurrency Control Services	0,767	0,0868	Valid
Recovery Services	0,802	0,0868	Valid
Authorization Services	0,553	0,0868	Valid
Support For Data Communication	0,768	0,0868	Valid
Integrity Services	0,859	0,0868	Valid
Services to Promote Data Independence	0,862	0,0868	Valid
Utility Services	0,789	0,0868	Valid

Source: Processed primary data, 2023

Table 3. Test the Validity of Digitalization Variables

Indicator Variables	r count	r table	Description
PMB Online	0,616	0,0868	Valid
Data storage, Retrieval & Update	0,956	0,0868	Valid
A useraccessible	0,856	0,0868	Valid
Payment System Online	0,906	0,0868	Valid
Concurrency Control Services	0,867	0,0868	Valid
Recovery Services	0,616	0,0868	Valid
Financial System Online	0,945	0,0868	Valid
Support For Data Communication	0,707	0,0868	Valid
Integrity Services	0,956	0,0868	Valid
Digital presence with QR-Code	0,693	0,0868	Valid

Source: Processed primary data, 2023

Table 4. Test the Validity of Master Data Management Variables

Indicator Variables	r count	r table	Description
Governance	0,782	0,0868	Valid
Measurement	0,874	0,0868	Valid
Organization	0,788	0,0868	Valid
Policy	0,865	0,0868	Valid
Technology	0,874	0,0868	Valid

Source: Processed primary data, 2023

Table 2,3,4 shows that the correlation between each indicator of each independent variable and the dependent variable shows significant results. This can be seen through the results of the r count > r table. So it can be concluded that each question indicator is valid. The results of the bivariate correlation analysis by looking at the Cronchbach Alpha output in the Correlated Item-Total Correlation column are identical because they both measure the same thing.

Classic assumption test

Table 5. Multicollinearity Test

Coefficient Correlations

Model			Digitization (X2)	Database Governance (X1)
1	Correlations	Digitization (X2)	1.000	-.850
		Database Governance (X1)	-.850	1.000
	Covariances	Digitization (X2)	.000	.000
		Database Governance (X1)	.000	.001

a. Dependent Variable: Master Data Management (Y)

Source: Processed primary data, 2023

Table 5. Paying attention to the results of the correlation magnitudes between independent variables, it appears that the database governance variable has a fairly high correlation with the digitalization variable with a correlation level of -0.850 or around 85.0%. Because this correlation is still below 95%, it can be said that there is no serious multicollinearity.

Table 6. Collinearity Statistics

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	110.654	6.501		17.021	.231		
	Database Governance (X1)	.178	.039	.930	4.550	.120	.992	1.007
	Digitization (X2)	.150	.059	.528	2.544	.011	.802	1.223

a. Dependent Variable: Master Data Management (Y)

Source: Processed primary data, 2023

Table 6. Shows the results of calculating the database governance tolerance value of 0.992 and digitization of 0.802 meaning that the values of the two independent variables are close to number 1, as well as the VIF database governance values of 1.007 and digitization of 1.223, the two independent variables are around number 1 and not more than 10, indicating

there is no independent variable that has a Tolerance value of less than 0.10, which means there is no correlation between the independent variables whose value is more than 95%. The results of the calculation of the Variance Inflator Factor (VIF) also show the same thing. There is not one independent variable that has a VIF value of more than 10. So it can be concluded that there is no multicollinearity between variables in the regression model.

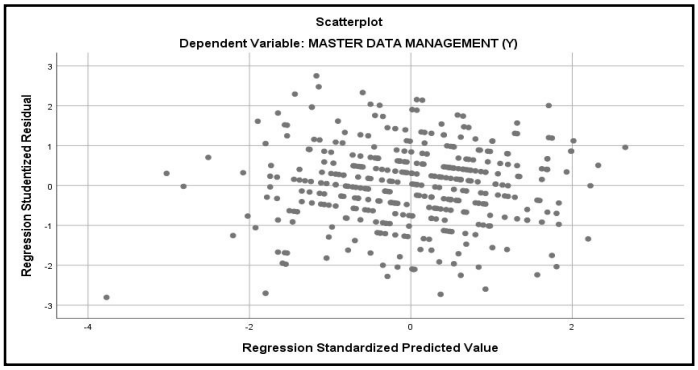

Figure 1. Plot Graph Heteroscedasticity Test
Source: Processed primary data, 2023

Figure 1. The scatterplot graph shows that the points spread randomly and are spread both above and below the number 0 on the Y axis. It can be concluded that there is no heteroscedasticity in the regression model so the regression model is feasible to use to predict Master data management based on independent variable input database governance and digitization.

Table 7. One-Sample Kolmogorov-Smirnov Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		373
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	1.03236649
Most Extreme Differences	Absolute	.085
	Positive	.085
	Negative	-.062
Kolmogorov-Smirnov Z		.597
Asymp. Sig. (2-tailed)		.616[c,d]
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		

Source: Processed primary data, 2023

Table 7. Describes normal when the significance level is > 0.05. Vice versa if the sign level is <0.05 then it is not normal. The results of SPSS analysis calculations for the one-sample Kolmogorov-Smirnov test show 0.616 > 0.05 meaning that the data is normally distributed.

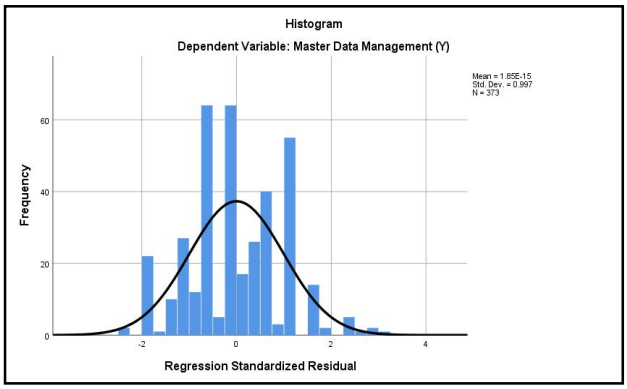

Figure 2. Histogram Diagram Normality Test
Source: Processed primary data, 2023

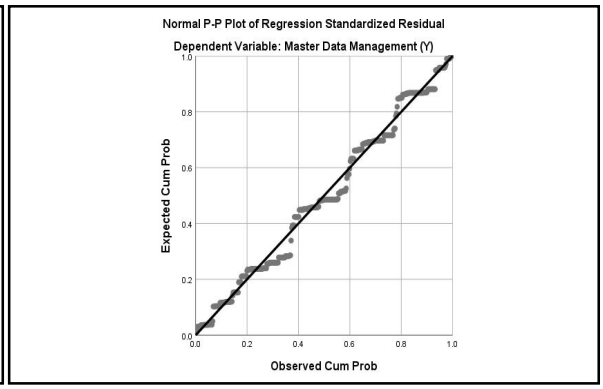

Figure 3. Scatter Plot Graph Normality Test
Source: Processed primary data, 2023

Figures 2 and 3 display histogram graphs and normal plot graphs. It can be concluded that the histogram graph provides a normal distribution pattern. Meanwhile, on the normal plot graph, it can be seen that the dots spread around the diagonal line, and follow the direction of the diagonal line, so the regression model meets the assumption of normality.

Multiple Regression Analysis

Table 8. Regression measurement results

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	110.654	6.501		17.021	.231
	Database Governance (X1)	.178	.039	.930	4.550	.120
	Digitization (X2)	.150	.059	.528	2.544	.011

Source: Processed primary data, 2023

Table 8. Shows the results of the regression measurements are shown in Table 4. Then the regression equation that is formed is Y = 0.930X1 + 0.528X2. From the regression equation, it can be interpreted that: (1) Database governance variable (X1) has a positive influence on master data management (Y) of 0.930. The database governance variable (0.930) has a greater influence on master data management when compared to the digitization variable; (2) The digitization variable (X2) has a positive influence on master data management (Y) of 0.528. The digitization variable (0.528) has a smaller influence on master data management than the database governance variable (0.930).

Goodness of Fit test

Table 9. Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. An error in the Estimate
1	.936[a]	.876	.875	1.035

Source: Processed primary data, 2023

Table 9. shows the model summary, the amount of adjusted R2 is 0.875, this means that 87.5% of the variation in master data management can be explained by the variation of the

two independent variables, namely database management, and digitization. While the rest (100% - 87.5% = 12.5%) is explained by other reasons outside the model. Standard Error of Estimate (SEE) of 1.035. This means that the smaller the SEE value, the more precise the regression model will be in predicting the dependent variable.

Table 10. F test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	357.267	2	178.634	12.645	.000[b]
	Residual	5227.081	370	14.127		
	Total	5584.349	372			

a. Dependent Variable: Master Data Management (Y)
b. Predictors: (Constant), Database Governance (X1), Digitization (X2)
Source: Processed primary data, 2023

Table 10. It is known that the significance value for the effect of X1 and X2 simultaneously on Y is 0.000 <0.05 and the calculated F value is 12.645 > F table 0.25 so it can be concluded that H0 is accepted and Ha is rejected with a 5% degree of confidence, in the sense the research model is accepted or can be used, which means that there is a simultaneous influence of database governance (X1) and digitization (X2) on master data management (Y).

Table 11. T test

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	110.654	6.501		17.021	.231		
	Database Governance (X1)	.178	.039	.930	4.550	.120	.992	1.007
	Digitization (X2)	.150	.059	.528	2.544	.011	.802	1.223

a. Dependent Variable: Master Data Management (Y)
Source: Processed primary data, 2023

Table 11. Shows: (1) Variable X1 (database governance) produces a count value of 4.550 t table value with df (degree of freedom) = n-k-1 = 373-2-1 = 370 of 1.282, which means count > table, with a significant probability of 0.000. The sig value is known. for the effect of X1 on Y is 0.000 <0.05. Because the probability is less than 0.05 and count > table, it can be concluded that individually variable X1 (database management) can significantly influence variable Y (master data management); (2) Variable X2 (digitization) produces a count value of 2.544 table value with df (degree of freedom)= n-k-1= 373-2-1=370 of 1.282 which means count > table, with a significant probability of 0.005. The sig value is known. for the effect of X1 on Y is 0.005 <0.05. Because the probability is less than 0.05 and count> table, it can be concluded that individual variable X2 (digitization) can significantly affect variable Y (master data management).

The Significance of the Impact of Database Governance on Master Data Management

Statistical testing of the hypothesis with multiple linear regression coefficient tests of database governance variables (X1) has a positive influence on master data management (Y)

of 0.930. The database governance variable (0.930) has a greater influence on master data management when compared to the digitization variable (0.528). Variable X1 (database management) produces a count value of 4.550 table value with df (degree of freedom)= n-k-1= 373-2-1=370 of 1.282 which means count > table, with a significant probability of 0.000. The sig value is known. for the effect of X1 on Y is 0.000 <0.05. Because the probability is less than 0.05 and count > table, it can be concluded that individual variable X1 (database management) can significantly influence variable Y (master data management).

The Significance of the Effect of Digitalization on Master Data Management

Statistical testing of the hypothesis with multiple linear regression coefficient tests of the digitization variable (X2) has a positive effect on master data management (Y) of 0.528. The digitization variable (0.528) has a smaller influence on master data management than the database governance variable (0.930). Variable X2 (digitization) produces a count value of 2.544 table value with df (degree of freedom)= n-k-1= 373-2-1=370 of 1.282 which means count > table, with a significant probability of 0.005. The sig value is known. for the effect of X1 on Y is 0.005 <0.05. Because the probability is less than 0.05 and count > table, it can be concluded that individual variable X2 (digitization) can significantly affect variable Y (master data management).

The Significance of the Impact of Database Governance and Digitalization on Master Data Management

Database governance has a fairly high correlation with digitalization with a correlation level of -0.850 or around 85.0%, the tolerance value for database governance is 0.992 and digitization is 0.802, for the one-sample Kolmogorov-Smirnov test it shows 0.616 > 0.05 meaning that the data is normally distributed. Adjusted R2 is 0.875, this means that 87.5% of the variation in master data management can be explained by the variation of the two independent variables, namely database management, and digitization. While the rest (100% - 87.5% = 12.5%) is explained by other reasons outside the model. Standard Error of Estimate (SEE) of 1.035. This means that the smaller the SEE value, the more precise the regression model will be in predicting the dependent variable. The significance value for the effect of X1 and X2 simultaneously on Y is 0.000 <0.05 and the calculated F value is 12.645 > F table 0.25 so that it can be concluded that H0 is accepted and Ha is rejected with a 5% degree of confidence, in the sense that the research model is accepted or can be used, which means that there is a simultaneous influence of database governance (X1) and digitization (X2) on master data management (Y).

Discussion

These empirical findings are by my research (Rahmadani, 2022) the results of STIKes Flora's research. The IT Governance Model for academic processes is manifested in the form of proposed IT academic process policies and procedures (Nur Aulia and Sri Handayaningsih, 2013). And also carried out a feasibility test of the academic process IT Governance Model which in general the respondents stated that it was appropriate so that it

was feasible to implement. In line with (Nusantara et al., 2018) the results of qualitative descriptive research in the form of a data management model that focuses on data governance, reference, master data management, and data quality management (M.Zahid Syafnel et al., 2019) also examines The effect of increasing the design value of the SPBE index is 0.03 or 2%. The design of governance using the DAMA DMBOK V2 framework is proven to be able to increase the maturity value of SPBE but increase the maturity value of the SPBE index. Malaysian local government organization management decisions require an MDM master data platform, data governance, and technology competency (Haneem et al., 2019). Integrated development of information systems and database management in MDM in tertiary institutions (Hendriyati et al., 2022).

Research (Suti et al., 2020) analyzes higher education governance in the era of information technology and digitalization. Management of higher education academic information systems based on information and communication technology (ICT) (Etin Indrayani, 2011). Implementing digital-based database governance helps overcome data duplication problems and ensures accurate and integrated data (Lestari et al., 2021). The services industry developments are synergies between digital services and new technologies (Reis et al., 2020). Digital transformation is influenced by the impact of technology, compartmentalized adaptation, systemic shifts, and a holistic evolutionary perspective, sustainable change (Hanelt et al., 2021). Digitization technologies can transform socioeconomic changes across individuals, organizations, ecosystems, and societies (Dąbrowska et al., 2022). Examined three databases LISTA, ERIC, and MEDLINE the findings show research data management in Academic Libraries (Xu et al., 2022).

The results of research (Hikmawati et al., 2021) show that MDM can overcome data quality problems through a master data process in collaboration with information technology (IT) staff through data governance. IT governance has become an interesting topic because of the important role of IT governance in 5 stages, namely cloud computing governance, IT governance success factor criteria, implementing and or evaluating governance with various methods in the business sector, and IT governance at universities (Najwa & Susanto, 2018). The efficiency percentage is measured by the percentage increase formula and the average efficiency percentage increase is 84%, indicating that the use of a data warehouse is more reliable and efficient than the use of an OLTP database (Warnars, 2010). The level of correctness, reliability, integrity, and usability of the academic information system meets or can be trusted/correct (Rasyid Ridha & Yuli Prasetyo, 2014). Strategic management practices at universities in building competitive advantage are the transformation of globalization, information exchange, digitalization, and social media, which affect the vision and mission of the university (Mohamed Hashim et al., 2022). (Basilotta-Gómez-Pablos et al., 2022) examining the digitization competence of teachers in higher education, the results reveal teacher self-assessments and reflections on the digital competence of low-secondary teachers. Digitalization in Russian universities is a discrepancy in the assessment of acquiring digital competence between universities and the real sector of the economy (Vasilev et al., 2020).

CONCLUSION

The effect of database governance on master data management is 93%, and the effect is positive and significant. The effect of digitalization on master data management is 52.8%, the effect is positive and significant. The effect of database governance and digitization on master data management is formed by the regression equation Y = 0.930X1 + 0.528X2 with R2 = 0.875 meaning that 87.5% of the variation in master data management can be explained by database governance and digitization. 12.5% is explained by other reasons outside the model. The limitation of the research is the number of respondents even though the research results are very dependent on the honesty of the respondents and the limitations of the data collection process. For future researchers, it is hoped that they will focus more on certain fields so that they can reduce the number of respondents.

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