

Citations And H Index: How Should We Modelling The Impact Of Publications In Accounting

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ABSTRACT

The research aims to discover the positive impacts of the number of Scopus documents on the number of citations and H index. There are three groups as the research objects: accounting lecturers in Indonesia, accounting lecturers from Universitas Airlangga, and Universitas Gunadarma. The secondary data of this research were obtained from the Sinta Ristekdikti Platform in December 2020. Ordinary Least Square (OLS) and Quantile Regression .50 were used to compare the best model among the available models. The results of this research show positive impacts on the number of Scopus documents towards the number of citations and H index to all of the tested groups.

Meanwhile, the goodness of fit test shows that OLS regression provides a better model than quantile regression. The results of this research imply that universities must motivate their lecturers to increase the number of publications to improve their performance. This study compares the OLS model with quantile regression. The research data is taken on the Sinta Ristekdikti page, especially for accounting lecturers, and uses the Minitab application, which has not been studied before.

Keywords: Scopus documents, Citation; H Index; Accounting lecturer; Indonesia

JEL: B41, C21, I23, M41

INTRODUCTION

Based on law number 14 issued in 2015 by the Indonesian government, which regulates the policy for teachers and lecturers in chapter 1, paragraph 2 stating that lecturers are professional educators and scientists whose primary responsibilities are to transform, develop, and disseminate knowledge, technology, and arts by the medium of education, research, and community service. According to Azman et al. (2020), a high teaching workload has disrupted the lecturers' conduct of research. As a result, the lecturers tend to spend more time preparing their teaching materials. University governance needs to be improved, including in terms of research publications. As academics, lecturers must contribute ideas for developing accounting theory and practice.

The number of research conducted by the lecturers in a university, both published in national and international journals, is required to improve the University's performance (Lei et al., 2014). Furthermore, the number of research is also served to determine the target of Key Performance Indicators (KPI) for each lecturer, and their university research publication can serve as a ranking benchmark for a University (Angiola et al., 2018). The performance in the field of research will also serve as a standard for the government to provide funds for universities (Xiong & Mok, 2020). Lei et al. (2014) state that less than half of the researched universities hold more than 20% publication rates from the existing journals. Based on the results of these studies, the University must monitor the development of the number of publications of its lecturers.

Margaretha & Saragih (2012) state that the total of 7 variables used in the research; were age, gender, academic position, length of employment, investment factor, consumption factor, and organizational support. Only one variable influencing the productivity of the lecturers' research; is the length of employment. The literature review conducted by Wibowo & Varikha (2018) regarding university research performance, university reputation, and university choices explains that the variables forming research performance are research excellence, scientific research capability, research productivity, strategic alliances through collaborative research, research quality,

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responsible scientific behavior, and wages for scientific productivity. Another research has found that the number of publications increases during the study (Annalingam et al., 2014; Tahamtan et al., 2016). International collaboration obtains more citations than other collaborations (Maryono dan Surajiman, 2017). The H index factors are the number of citations, recent educational background, recent educational institution, and the number of documents supplied in Indonesian and English (Aini et al., 2019). In contrast, DOAJ does not significantly affect the number of citations in the journals (Muriyatmoko, 2020).

The inconsistent result from the previous research encourages the research on the influence of the number of Scopus documents on the number of citations and H Index Scopus. Previous studies have not compared the research model using OLS and quantile regression. So, it needs to be done to determine which model is more effective in explaining the effect of the number of publications on the number of citations and the H index of lecturers, especially those who teach Accounting. This study also analyzes the application of the research model to lecturers who teach at public and private universities and all accounting lecturers in Indonesia.

The research objectives are to test the influence of the number of Scopus documents on the citation number, the number of Scopus documents on the H index Scopus, and the comparison results of OLS and quantile regression. This research provides a theoretical contribution, especially regarding the achievement of the performance and reputation of the University, which is supported by the number of lecturer publications proven to increase the number of citations and the H index of lecturers.

LITERATURE REVIEW

Research conducted by Hemmings & Kay (2010) on the journal and academic publication level in Australia states that less than half of the researched universities hold a publication rate of more than 20% from the existing journals. Academics with more journals tend to own higher publication rates, while senior academics tend to have higher publication rates than junior academics. Academics who hold doctoral degrees have the highest publication rate. Margaretha & Saragih (2012) state that the total of 7 variables used in the research; were age, gender, academic position, length of employment, investment factor, consumption factor, and organizational support. Only one variable influences the productivity of the lecturers' research; it is the length of employment.

The literature review conducted by Wibowo & Varikha (2018) regarding university research performance, university reputation, and university choices explains that the variables forming research performance are research excellence, scientific research capability, research productivity, strategic alliances through collaborative research, research quality, responsible scientific behavior, and wages for scientific productivity. Lei et al. (2014) researched the development of scientific publication and citation analysis in the Asian Pacific Journal of Tropical Medicine (APJTM) from 2008 to 2014. The study explained a development in the number of research publications; no less than ten studies received citations more than ten times. Although they experienced outcomes, the authors in each country were disproportionate.

Another research has found that the number of publications increases during the study. More than three – a quarter of papers are published in international journals. More than half of the publications are research studies (55,3%), and most of the studies in the research are cross-sectional descriptive studies (27,1%). The average number of citations in 2 years is 1,7 and 52,1%; the papers are not cited in the first two years of the publication. The average number of citations for the collaborative study is 2,74, which is significantly higher than non – the collaborative study, whose average number of citations is only 0,66. The average number of the citations has not changed significantly, depending on whether the publication is resulting in positive results (2.08) or not (2.92), and it is also not influenced by the presence (2.30) or absence (1.99) of the leading research conclusions (Annalingam et al., 2014).

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There are three general categories with 28 identified factors related to the number of citations.

Category	Related Factors
The papers	The papers quality, the novelty and interests of the subject, the characteristics field and topic of the study, methodology, documents type, study design, the characteristics results, and discussion; the use of graphics and attachment in the papers; the characteristics of title and abstract; the characteristics of references; the length of the paper; the age of the paper; initial quote and speed quote; accessibility and visibility of the paper.
The covers - journal	journal impact factors; language style of the journal; coverage of the journal; the form of publications
The covers - author	the number of authors; the reputation of the authors; the academic ranking of the authors; self – quote; the collaboration of national and international authors; the country of origin of the authors; gender, age, and race of the authors; productivity of the authors; organizational features; and funding

Source: (Tahamtan et al., 2016)

The Number of Scopus Documents to The Number of Citations

International collaboration obtains more citations compared to other collaboration and individual work. The collaborator countries producing the highest citation are Japan, the United States of America, and the Netherlands. The individual publication is not correlated with the obtained citations. Meanwhile, the publication obtained by collaboration works is all positively correlated. International collaboration will be expected to have a perfect correlation of +1 by the end of 2010 – 2019 (Maryono dan Surajiman, 2017).

According to the national journal accreditation system, DOAJ is a moderately reputable indexing agency. It was recorded that until March 2019, there were 52 *Sinta* – Accredited journals 1, one of them being the highest quality indexed journal nationally. Nevertheless, in reality, only 37 (72.5%) indexed journals DOAJ do not necessarily have a high number of citations. The statistic results show the correlation between the moderate category ($R= 0.426$) and the impacts of DOAJ towards the citation of 18.2% (R Square), while the rest is 81.8% influenced by other factors. According to this research, it is concluded that DOAJ does not significantly affect the number of citations in the journals (Muriyatmoko, 2020).

The research results show that the factors impacting the annual number of citations are recent educational background, recent educational institution, and the number of documents supplied in English. Additionally, the modeling results in each major that the number of documents supplied in English is the most influential factor in almost all majors. The results of the recursive model show that the factors impacting the number of citations are the recent educational institutions and the number of documents supplied in English. In contrast, the factors affecting the H index are the number of citations, recent educational background, recent educational institution, and several documents supplied in Indonesian and English (Aini et al., 2019). According to the previous research, the research hypothesizes that:

H1: the number of Scopus documents positively impacts the number of citations.

The Number of Scopus Documents to The H Index

Other research findings show that (a) A relatively small proportion of a university and scholars contribute to most citations in the field; (b) total publication contributes to most variants in the University's citation; (c) size of the University, the number of awarded Ph.D. degree, research expenditure, and endowment asset holds the most significant influence to the publication of the University; and (d) total publication, length of the experience in the field, the reputation of postgraduate school, and editorial board membership have the most significant effect to the citation of a scholar (Podsakoff et al., 2008).

Furthermore, academic institutions look at the number and institution of publications as well as subjective perspectives from their colleagues, the number of the recruitment committee, length of the position held, and promotions. They also rely on citation analysis to gain a more objective

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assessment of the author's work. The Institute for Scientific Information (ISI) citation database, widely used as a starting point, if not the only source for finding citations, has several limitations that can leave gaps in citation coverage for the author's work (Kiduk & Meho, 2006).

H Index is a value where someone has published at least H papers with at least H citations that have become a popular matrix to assess the citation impacts from the scholars. As how it has been recorded in the original work of Hirsch and how it has been proven from the data samples by the representative of the physicist, c scales as h , where c is the total number of a citation for an individual. Therefore, c seems to be the sample equivalent of being at a sharp peak around 1. The quantile in the distribution shows the primary difference in the H index. As a further examination of this equality, ratio s distribution $\equiv c/2h$ (Redner, 2010).

Of the total of 943 lecturers at *Institut Teknologi Sepuluh November (ITS)*, there are only 457 lecturers who have published their journals in Scopus, with a ratio of 73% male lecturers (Sari, 2016). The factors influencing the ownership of publication in Scopus are age, functional position, recent educational background, recent educational institution, and significance. At the same time, the factors influencing the number of citations are the length of employment, available position, gender, recent educational institution, the number of documents, and co-authors. The H index factors are the number of citations, documents, and recent educational background (Sari, 2016). According to the previous research, it is hypothesized that:

H2: the number of Scopus documents positively impacts the H index.

Quantile Regression Model Compared To The OLS Model

Regression is a method to estimate the required numbers from the distribution of variable response in a linear model that provides a more complex perspective about the possibility of the cause-and-effect relationship between each variable in the ecology process. Commonly, the factors impacting the ecology process are not measured and included in the statistic model used to investigate the correlation between the related variables. As a result, there might be a weak predictive correlation between the mean distribution of variable response (y) and measured prediction factors (X). However, there is a possibility of more substantial and helpful predictions from the distribution of variable responses. This technique connects the estimation of quantitative regression with the interval prediction in the distribution regression model of error parametric (such as the smallest square). It discusses the ordering characteristics, interval properties, sampling variation, weighting, and interpretation estimation for the homogeneous and heterogeneous regression models (Cade & Noon, 2003).

The quantile regression in another research was applied to the publication of ITS lecturers in Scopus, where the dependent variables used are citation and H index. The simulation study results show that the homogeneous residual to the quantile regression increases intercept values while the slope value in every quantile is equal. The heterogeneous residual in the quantile regression, intercept and slope values will always increase. This result follows the theory that quantile regression can model according to the data distribution. The results of quantile regression analysis found that citations always equal the number of documents and co-authors. On the other hand, the number of documents on multivariable quantile regression influencing the citation and H index shows similar results in every quantile. The complete results have been known that the quantile regression can model the publication date of the lecturers at ITS in the Scopus according to the data distribution (Hapsery, 2017).

The capability of the quantile regression method median in solving heteroscedasticity issues is viewed on the test results of heteroscedasticity to the data error after the analysis on quantile regression. The analysis of the homoskedasticity data is more accurate by using MKT (least squares method). In contrast, the analysis of the heteroscedasticity data is more accurate by using quantile regression median since the method can abolish heteroscedasticity. However, this research shows that the KTE (quantile square error) value obtained by the median quantile regression is higher than the MKT (Widodo & Andani, 2016; Kraus et al., 2017). Therefore, according to the previous research, it is hypothesized that:

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H3: The Quantile regression method produces a better model than the OLS regression method.

RESEARCH METHOD

This research involves a quantitative approach where the research data are secondary data obtained from the Sinta platform collected in December 2020. This period was taken because this year is the beginning of the covid pandemic, where many researchers work from home, so it is assumed that they have more opportunities to conduct research. The research consists of 3 different groups: all accounting lecturers in Indonesia, accounting lecturers at Universitas Airlangga, and accounting lecturers at Universitas Gunadarma. The two objects were selected as samples in this study to represent public and private universities with many accounting lecturers that were not much different. There are 5341 accounting lecturers in Indonesia, where Airlangga University has 31 accounting lecturers, while Gunadarma University has 42 accounting lecturers with Sinta ID.

Statistic applications used for the research are Minitab 19 and Stata 14. Minitab 19 conducts descriptive statistics, normality tests, outlier tests, and OLS regression. At the same time, Stata 14 is used to conduct a heteroscedasticity test and quantile regression 50. Furthermore, the OLS regression test results and quantile 50 will be compared to obtain the best model. In order to obtain the best model, the first step is conducting descriptive statistics to discover the data distribution, and then a hypotheses review using OLS regression analysis will be conducted.

The regression analysis has assumptions that must be fulfilled. The assumptions are required in the research to assess the goodness of a regression equation (Zuhairi et al., 2020). The assumptions are categorized into the classic assumption that covers normality, homoscedasticity, multicollinearity, and autocorrelation (Gujarati & Porter, 2009). However, this research only involves the normality and heteroscedasticity tests.

The next step is the quantile regression test, mainly to quantile 50. The quantile dividing the ordered data into two different parts is known as the median, while the quantile dividing the ordered data into four other parts (Q1, Q2, Q3), decile is known as the quantile dividing the ordered data into ten different parts as shown in (D1, D2, ... D9). Lastly, the quantile dividing the ordered data into 100 parts is the percentile, as shown in (P1, P2, ... P99) (Harding & Lamarche, 2012). This research focuses more on the quantile regression.50. The median or middle value is the center of collected data that has been previously ordered (Kong & Xia, 2012). If the value of X_1, X_2, \dots, X_n states the random sample of n value sorted from the smallest to the most significant scale, the median value is determined by quantile regression R (Romano et al., 2019). The quantile regression is used by dividing or separating the data into two or more parts where it is suspected to show different estimator values to the specific quantile (Romano et al., 2019). The quantile regression minimizes the error's absolute value, which is the minimum sum of positive and negative errors. Moreover, this gives a weight difference for positive and 1 for harmful errors (Koenker, 2011).

In quantile regression, the median can define the median as a solution to minimize the number of absolute error values (Romano et al., 2019). Compared to MKT, the main advantage of quantile regression is flexibility when modeling data with heterogeneous conditional distributions. Quantile regression can measure the effect of predictor variables in the center of the data distribution and at the top or bottom of the tail of the distribution. Using median quantile regression to estimate data with heteroscedasticity is more efficient (Koenker, 2011). Previous research used a recursive quantile regression model to analyze the publications of ITS lecturers (Surabaya Technical Institute) (Hapsery, 2017).

RESULTS

Descriptive statistics is the review method used to discover the data distribution of the research in 3 different groups, namely all accounting lecturers in Indonesia, accounting lecturers at

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Universitas Airlangga, and Universitas Gunadarma. Following are the results of Minitab 19 for the review of the descriptive statistics:

Table 1. Descriptive Statistic

Variable	N	Mean	SE Mean	StDev	Minimum	Maximum	Median
All Accounting Lecturers in Indonesia							
Num. Doc Scopus	5341	0,7676	0,0404	2,9505	0,0000	86,0000	0,0000
Num Cit Scopus	5341	1,749	0,200	14,646	0,000	404,000	0,000
H-Index Scopus	5341	0,1681	0,00849	0,6207	0,00000	11,0000	0,00000
Accounting Lecturer of Airlangga University							
Num. Doc Scopus	31	8,58	1,42	7,92	0,00	34,00	7,00
Num Cit Scopus	31	22,48	8,91	49,61	0,00	240,00	3,00
H-Index Scopus	31	1,548	0,353	1,964	0,000	8,000	1,000
Accounting Lecturer of Gunadarma University							
Num. Doc Scopus	42	0,452	0,234	1,517	0,000	7,000	0,000
Num Cit Scopus	42	0,238	0,127	0,821	0,000	4,000	0,000
H-Index Scopus	42	0,0952	0,0458	0,2971	0,0000	1,0000	0,0000

Source: processed Minitab output

According to the data above, the number of accounting lecturers in Indonesia listed on the Sinta platform is 5.341. Thirty-one are accounting lecturers from Universitas Airlangga, and forty-two are accounting lecturers from Universitas Gunadarma. The data for all accounting lecturers in Indonesia shows that the average number of Scopus documents is 0,7676. In other words, it is less than 1 document. Moreover, this indicates that not all accounting lecturers in Indonesia publish their journals in the Scopus database. The average number of citations belonging to the lecturers who publish their journals in the Scopus database is 1,749. The articles are averagely cited almost two times, while the H index average value is 0,1681. The minimum score and median of the citation are 0, meaning many lecturers do not publish their articles in the Scopus database. The maximum score of the Scopus document is 86; the number of citations reaches 404 with an 11 H index. The scores indicate that some lecturers actively publish their journals in the Scopus database, while many have not published on the platform yet.

The data of accounting lecturers from Universitas Airlangga shows that the average number of published articles on the Scopus platform is 8,58. The average number of citations of the lecturers who have published their articles on the Scopus platform is 22,48. The data indicates that the articles are averagely cited almost 23 times. At the same time, the h index average of the articles is 1,548 with a minimum score of 0, and the maximum score of the documents published on the Scopus platform is 34, with the number of citations 240 and the H index reaching the score of 8. The median score of the number of documents published on the Scopus platform is 7, with 3 and 1 H index citations. The high average score shows that the accounting lecturers at Universitas Airlangga are considerably active in publishing their articles on the Scopus platform.

Meanwhile, the data of the accounting lecturers from Universitas Gunadarma shows that the average number of published articles on the Scopus platform is 0,452. The average citation number from the lecturers who have published their articles on the Scopus platform is 0,238, while the average H index is 0,0952. The minimum and the median score are 0, while the maximum score of the number of published articles on the Scopus platform is 7, with the citation number of 4 and 1 H Index. The average scores are considerably lower than the data of the accounting lecturers from Universitas Airlangga; therefore, an improvement in the number of published articles on the Scopus platform for the accounting lecturers at Universitas Gunadarma is required. One of the strategies to improve is providing rewards to the lecturers actively publishing their articles to the Scopus database, as demonstrated by Universitas Airlangga.

Furthermore, a normality test is conducted to discover whether the data used in the research is distributed normally. Following is the table of normality tests containing the results from Minitab 19.

Table 2. Normality Test

Variable	N	Mean	AD	StDev	P Value
All Accounting Lecturers in Indonesia					
Num. Doc Scopus	5341	0,7676	1350, 952	2,951	< 0,005
Num Cit Scopus	5341	1,749	1765,600	14,65	< 0,005
H-Index Scopus	5341	0,1681	1501, 320	0,6207	< 0,005
Accounting Lecturer of Airlangga University					
Num. Doc Scopus	31	8,581	1,081	7,924	0,007
Num Cit Scopus	31	22,48	6,031	49,61	< 0,005
H-Index Scopus	31	1,548	2,772	1,964	< 0,005
Accounting Lecturer of Gunadarma University					
Num. Doc Scopus	42	0,4524	13,071	1,517	< 0,005
Num Cit Scopus	42	0,2381	13,071	0,8208	< 0,005
H-Index Scopus	42	0,0952	13,884	0,2971	< 0,005

Source: processed Minitab output

Besides the results above, the research also provides the results of the normality test plot in the graphic attached in the article's appendix. Based on the graphic of the normality test plot (in the appendix), the table above shows that the data from the three groups are not normally distributed because it does not follow the diagonal line in the plot image. In addition to the data in the table above, it can be seen that the p-value of all models is less than 0, 05.

The next test conducted in the research is discovering the outlier in all the tested variable data. Following is the result of the outlier test according to the output from Minitab 19:

Table 3. Grubbs's Test and Outlier

Variable	Throughout Indonesia			Airlangga Univ.			Gunadarma Univ.		
	G	Row	Outlier	G	Row	Outlier	G	Row	Outlier
Num. Doc Scopus	28,89	3	86	3,21	1	34	4,31	3	7
Num Cit Scopus	27,46	101	404	4,38	19	240	4,58	2	4
H-Index Scopus	17,45	101	11	3,29	19	8	3,05		

Source: processed Minitab output

According to the data table and outlier graphic (attached in the appendix), all groups indicate outlier data. Furthermore, it shows that the number of documents, citations, and the H Scopus index for the accounting lecturers have not been evenly distributed. Some lecturers actively produce and publish many articles in the Scopus database, while many have not published any articles in the Scopus database. Therefore, each University needs to prepare strategies to increase the article's publication in the Scopus database. The Ministry of Research and Higher Education of the Republic of Indonesia also needs to encourage the lecturers to produce and publish articles in the Scopus database.

Furthermore, it is necessary to see the model summary from the above equations and its prediction model. The following table shows the data of the model summary:

Table 4. Model Summary

Group	Model	S	R-sq	R-sq(adj)	R-sq(pred)
Throughout Indonesia	x => y1	2,34525	36,83%	36,82%	34,67%
	x => y2	1,75775	64,52%	64,51%	63,70%
Airlangga University	x => y1	6,13128	42,12%	40,12%	40,00%
	x => y2	4,88789	63,22%	61,95%	43,48%
Gunadarma University	x => y1	0,896088	65,98%	65,13%	60,12%
	x => y2	0,564579	86,49%	86,16%	75,99%

Source: processed Minitab output

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According to the model summary table above, it is indicated that the group of accounting lecturers in Indonesia for the model of the number of the Scopus documents towards the number of citations of the Scopus is 36,83%, with the model prediction of 34,67%. At the same time, the model of the number of the Scopus documents towards the H Scopus index is 64,52%, whereas the model prediction is 63,7%. The model of the number of Scopus documents towards the number of the citation of the Scopus in the group of accounting lecturers at Universitas Airlangga shows 42,12%, with the model prediction of 40%. Meanwhile, the model of the Scopus documents towards the H index is 63,22%, whereas the model prediction is 42,48%. Lastly, the group of accounting lecturers of Universitas Gunadarma shows 65,98% for the model of the number of documents towards the number of the citation of the Scopus with the model prediction of 60,12%. At the same time, the model of the number of the Scopus documents towards the H Scopus index is 86,49%, whereas the value of the model prediction is 75,99%.

Hypotheses review by using the OLS regression analysis is the next step to do in order to discover the influence of each variable on all of the existing groups. Following is the presented regression table:

Table 5. OLS Regression

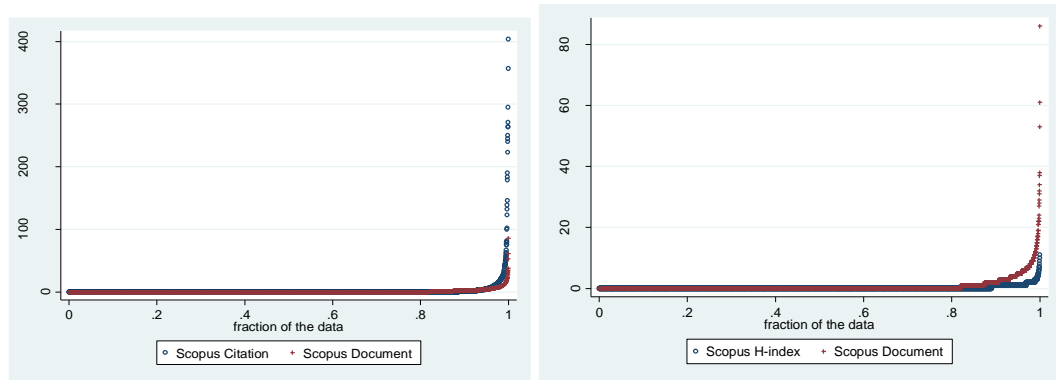
Group	Scopus Doc. => Citation		Scopus Doc. => H Index	
Throughout Indonesia	Prob > F	= 0.0000	Prob > F	= 0.0000
	R-squared	= 0.3683	R-squared	= 0.6452
	Root MSE	= 11.642	Root MSE	= .36975
Airlangga University	Prob > F	= 0.0001	Prob > F	= 0.0000
	R-squared	= 0.4212	R-squared	= 0.6322
	Root MSE	= 38.391	Root MSE	= 1.2113
Gunadarma University	Prob > F	= 0.0000	Prob > F	= 0.0000
	R-squared	= 0.6598	R-squared	= 0.8649
	Root MSE	= .48468	Root MSE	= .11054

Source: processed Minitab output

The probability value shows a significant value if it is $<0,05$, which means there is a significant influence from the independent and dependent variables for all research models belonging to the three groups. When all the tested groups accept the hypotheses review, a significant influence will be found between the number of Scopus documents, the number of the Scopus citation, and the number of the H Scopus Index. Furthermore, if the R-Squared value is closed to 1, it indicates that the model used in the research is promising. The data above shows various scores ranging from close to 1 and below 0,5. A low RMSE value indicates that the variation score produced by the prediction model is close to the observed variation score. RMSE calculates how different a set of values is. The lower RMSE score will indicate that the predicted and observed score is getting closer. Furthermore, the data above show the low-score data, except for the model of the number of documents towards the number of citations to all accounting lecturers in Indonesia and Universitas Airlangga.

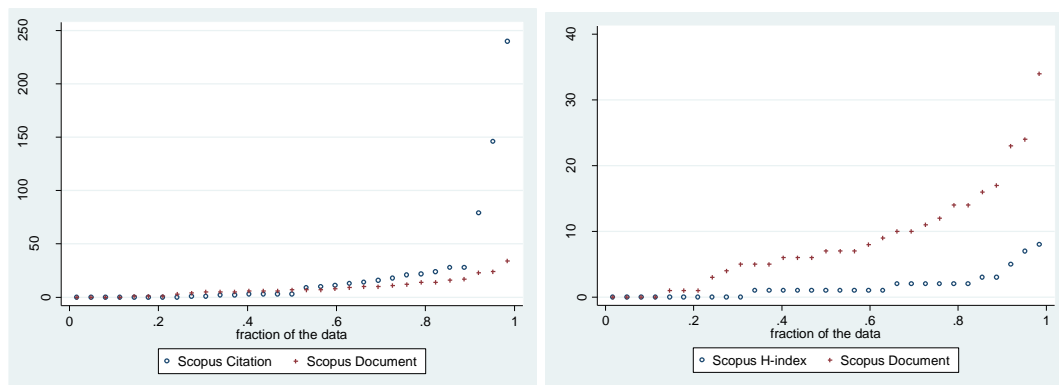
The test result of Breusch-Pagan on heteroscedasticity shows that the value of $\chi^2(1) = 79907,60$. $\text{Prob} > \chi^2 = 0,0000$. Based on the Prob calculation on χ^2 $0,000 < 0,05$, it means that the heteroscedasticity issues occur. Heteroscedasticity is the opposite of homoscedasticity, a condition where variant inequality from the error for all observations to every independent variable in the regression model. Homoscedasticity is promising data. Furthermore, it is a condition where the variant equality occurs from the error for all observations to every independent variable in the regression model.

Moreover, quantile regression is required to compare the OLS regression results with the 50-regression quantile. Following is the quantile regression graphic at 50 for every group and model.



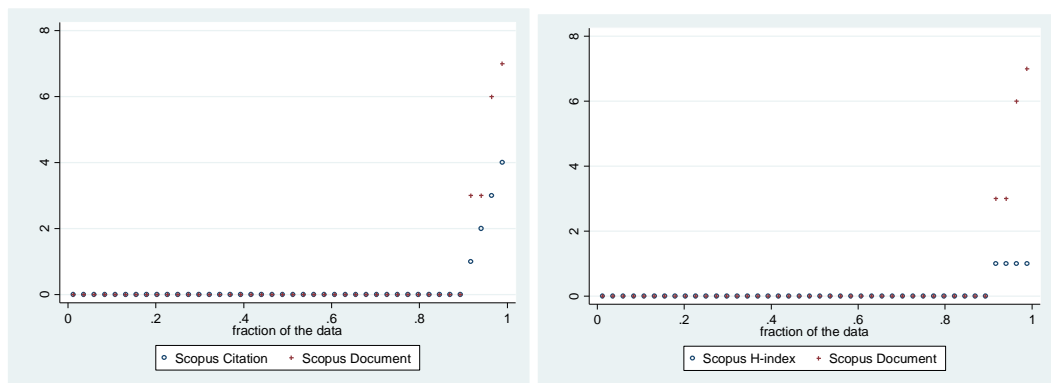
Source: processed data output

Figure 1. Quantile Regression .50 for all Accounting lecturers in Indonesia



Source: processed data output

Figure 2. Quantile Regression .50 for Accounting Lecturer in Airlangga University



Source: processed data output

Figure 3. Quantile Regression .50 for Accounting Lecturer in Gunadarma University

The outlier data in each tested group is shown in the Figure above. However, such data do not meet the normality test and heteroscedasticity. Therefore, the quantile regression provides a better solution for that. Following is the output table from the .50 quantile regression.

Table 6. Comparison of Regression Coefficients with OLS and Quantile .50

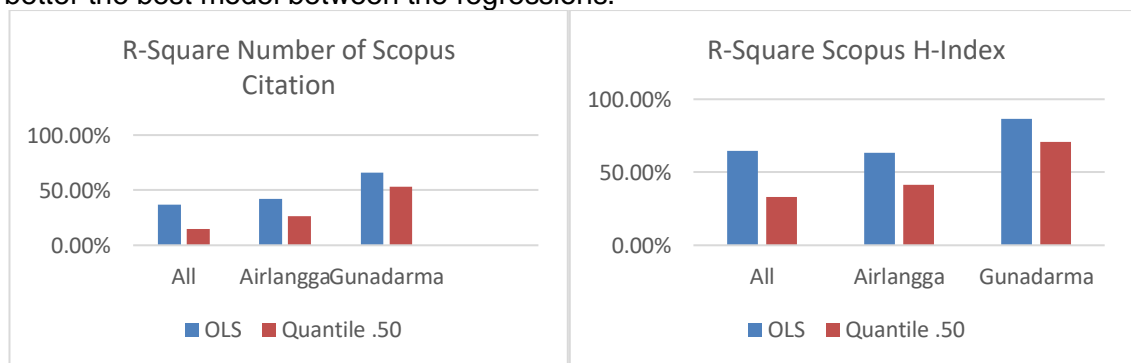
Group	Number of Scopus Documents	OLS		Quantile Reg .50			
		Coef	P	R2	Coef	P	Pseudo R2
Throughout Indonesia	Constant	0,5539	0,000		0	1,000	
	Num. Scopus Cit.	0,1223	0,000	36,83%	1	0,000	14,58%
	Constant	0,1256	0,000		0	1,000	
	Scopus H-Index	3,8185	0,000	64,52%	0,1667	0,000	33,30%
	Constant	6,25	0,000		-1,6923	0,806	

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Airlangga University	Num. Scopus Cit.	0,1036	0,000	42,12%	1,6924	0,008	26,61%
	Constant	3,61	0,003		0	1,000	
Gunadarma University	Scopus H-Index	3,208	0,000	63,22%	,1818	0,000	41,52%
	Constant	0,095	0,514		-5,55	0,169	
	Num. Scopus Cit.	1,502	0,000	65,98%	0,6667	0,028	53,33%
	Constant	-0,0000	1,000		0	1,000	
	Scopus H-Index	4,750	0,000	86,49%	0,1667	0,000	70,83%

Source: processed Stata and Minitab output

According to Table 6, it is concluded that 95% of the trust level for the first group (all accounting lecturers in Indonesia) will averagely increase 1 Scopus document; as a result, the increase in the number of the citation number to 50% quantile is in between 0,9887 – 1,0113, at the same time, the growth on the number of H index is in between 0,1654 – 0,1679. In the group of accounting lecturers of Universitas Airlangga, the average increase of 1 Scopus document will increase the citation number to 50% quantile between 0,4871 – 2,8975, while the increase on the H index is between 0,1347 – 0,2290. In the group of accounting lecturers of Universitas Gunadarma, the average increase of 1 Scopus document will increase the citation number to 50% between 0,0764 – 1,2570; at the same time, the increase on the H index is between 0,1506 – 0,1827. Hypotheses review for both H1 and H2 according to the can be seen from the P-value where all of the variables scored <0,05 mean that each variable significantly influenced because the coefficient value from each variable is positive; hence, it is concluded that each predicted variable shows the significant positive influence. Furthermore, the comparison between coefficients from OLS regression proceeds. The coefficient table data can formulate research equations from each model. The coefficient table is shown by comparing the coefficient result and p-value using the OLS regression method to find better the best model between the regressions.



Source: processed Table 6

Figure 4. R-Square Number of Scopus Citation and H-Index Scopus

Based on Figure 4, it can be concluded that the OLS model produces a higher R Square in the three groups studied. This result indicates that the OLS model is better used to test the effect of the number of documents on the number of Scopus citations and the Scopus H-index.

Table 7. Research Equation According to OLS Regression

Grup	Equation
Throughout Indonesia	Num. of Scopus Doc = 0,5539 + 0,12226 Num. Scopus Citation
	Num. of Scopus Doc = 0,1256 + 3,8185 H-Index Scopus
Airlangga University	Num. of Scopus Doc = 6,25 + 0,1036 Num. Scopus Citation
	Num. of Scopus Doc = 3,61 + 3,208 H-Index Scopus
Gunadarma University	Num. of Scopus Doc = 0,095 + 1,502 Num. Scopus Citation
	Num. of Scopus Doc = -0,0000 + 4,750 H-Index Scopus

Source: processed Minitab output

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According to the coefficient score above, the score of R – squared from the OLS regression shows a higher score than the 50 – quantile regression results. Reviewed from the R square value, the OLS regression model can form a better model. However, this cannot be used as a guideline. Although the R square is good, the above data cannot be tested using OLS regression because it does not meet the normality and heteroscedasticity assumption tests. Therefore, the research equation made is based on the coefficient value as a result of the 50 – quantile regression output arranged as follows:

Table 8. Research Equation According to Quantile .50 regression

Kelompok	Equation
Throughout Indonesia	Num. of Scopus Doc = 0 + 1 Num. Scopus Citation Num. of Scopus Doc = 0 + 0,1667 H-Index Scopus
Airlangga University	Num. of Scopus Doc = -1,692 + 1,692 Num. Scopus Citation Num. of Scopus Doc = 0 + 0,818 H-Index Scopus
Gunadarma University	Num. of Scopus Doc = -5,55 + 0,667 Num. Scopus Citation Num. of Scopus Doc = 0 + 0,167 H-Index Scopus

Source: processed data output

According to the equality model above, the following is the interpretation of equality:

- The constant value is 0, meaning that if the number of Scopus documents does neither increase nor decrease, the number of citations is 0%. The regression coefficient for the number of citations is 1, meaning that if the number of Scopus documents increases by 1, the number of citations will increase by 100%.
- The constant value is 0, meaning that the number of Scopus documents does neither increase nor decrease, and the number of the h index is 0%. The regression coefficient of the H index is 0,1667, meaning that the number of Scopus documents increases by 1, and the number of H index will also increase by 16,67%
- The constant value is -1,692, meaning that the number of Scopus documents does neither increase nor decrease. The number of citations is -169,2%. The regression coefficient of the citation number is 1,692, meaning that the number of Scopus documents will increase by 1. Then, the number of citations will also increase by 169,2%.
- The constant value is 0, meaning that the number of Scopus documents neither increases nor decreases, and the number of h index is 0%. The regression coefficient of the h index is 0,818, meaning that the number of Scopus documents will increase by 1. Then, the value of the h index will also increase by 81,8%.
- The constant value is -5,55, meaning that the number of Scopus documents neither increase nor decrease and the number of citation is 555%. The regression coefficient of the number of citations is 0,667. Meaning that if the Scopus document increase by 1, the number of citations will also increase by 66,7%
- The constant value is 0, meaning that the number of Scopus documents neither increases nor decreases, and the number of the H index is 0%. The regression coefficient of the number of citations is 0,167. If the Scopus document increases by 1, the H index score will also increase by 16,7%.

DISCUSSION

The hypotheses review on the influence of the number of Scopus documents on the number of citations shows a positive influence between variables. The number of Scopus documents' influence on the H index also shows a positive influence. The same thing also occurred in the previous research, showing that the factors influencing the number of citations are educational institutions and the number of documents supplied in English. The factors influencing the index are the number of citations, recent educational background, recent educational institutions, and the number of documents supplied in Indonesian and English (Annalingam et al., 2014; Hapsery, 2017). Other research has

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also mentioned that citations are promoted by the publication notes and substantially increased by the number of more extensive author's team and the co-author's network (Bosquet & Combes, 2013). Considering the importance of the research performance for universities as an implementation form of three – pillars of the higher education institution, it is essential for the universities to encourage their lecturers to increase the number of produced publications.

Other research findings have found that (a) A relatively small proportion of a university and scholars contribute to most citations in the field; (b) total publication contributes to most variants in the University's citation; (c) size of the University, the number of awarded Ph.D. degree, research expenditure, and endowment asset hold the most significant influence to the publication of the University; and (d) total publication, length of the experience in the field, the reputation of postgraduate school, and editorial board membership have the most significant effect to the citation of a scholar (Treisman et al., 2016). International collaboration obtains more citations compared to other collaborations and individual works where the collaborator countries producing the highest citation are Japan, the United States of America, some others, and the Netherlands. The individual publication is not correlated to the obtained citations, while the collaborative publication is all positively correlated. International collaboration is expected will lead to a perfect correlation of +1 in the last decade of 2010 – 2019 (Maryono dan Surajiman, 2017). The number of published articles through joint authors contributes 89%. Citation-based performance and joint authors show the power of law correlation. Citation for subfield research articles tends to increase whenever the number of co-authored papers doubles. The number of citations to the number of research articles with single-author sub-fields increases whenever the research area doubles the number of single-author papers. Matthew's effect is considerably more substantial in joint papers than in single-authors papers (Liu, 2013). Several factors such as the quality of the papers, the impact of the papers, the number of authors, visibility, and international cooperation are the stronger predictor for citations compared to gender, age, and the race of the authors; the result features, and discussions (Tahamtan et al., 2016). The findings indicate that universities need to increase the number of papers/articles and encourage collaboration between their scholars and foreign authors to increase the number of citations.

Mind Mapping and SWOT Analysis are other applicable methods to increase the number of citations and H – Index of the lecturers on Google Scholars that can automatically increase the affiliations of the authors on Google Scholars. Moreover, the lecturers who hold verified authors on the *SINTA Ristekdikti* (Science and Technology Index) platform can contribute to increasing the ranking as well as the score of the University on the *SINTA Ristekdikti* platform (Aini et al., 2019). The h-index corrects some of the shortcomings of standard indicators due to the skewed distribution of citations in publications. However, the H – Index indicates some primary issues, particularly on comparing the H – Index or when an evaluation with the researchers based on the H – Index is required. The H-index (as proposed by Hirsch) has issues that must be taken seriously and addressed when using it. However, given the wide availability and perhaps also the popularity of the h-index, this requirement can sometimes seem difficult to fulfill (Dinkel, 2011; Lei et al., 2014). Universities can also conduct a SWOT analysis, mind mapping, and other strategies to increase lecturers' h index in their environment.

The research results show that, generally, state universities represented by Airlangga University show a better performance than private universities represented by Gunadarma Universitas. In this matter, the accounting lecturers of Universitas Airlangga have a higher Scopus document, the number of citations and the H – Index compared to the accounting lecturers of Universitas Gunadarma. Universities with special missions perform comparably to comprehensive public universities. This result follows the previous research mentioning that public universities tend to show a better research performance than private universities (Lee et al., 2016; Angiola et al., 2018). Other researchers have found that the senior scholars published more publications than the

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junior ones two decades ago; however, no distinctive difference has been found in the productivity found today (Cricelli et al., 2018). Universities cannot only focus on the senior lecturers without encouraging the junior lecturers to perform and involve in the research field (Arrieta & Avolio, 2020). The research above states that there is equality in terms of the number of publications on both senior and junior scholars. Public universities may perform more excellently than private universities in the research field (Bingab et al., 2018). This fact is due to the remuneration that provides bonuses for the lecturers who publish articles in national and international – reputed journal databases (Guthrie et al., 2014).

The research results show the estimation and median quantile regression on the heteroscedasticity data analyzed using the 50-quantile regression. Such a step is taken to discover if the heteroscedasticity data is analyzed using the 50-quantile regression. According to the data in table 7, the p-value shows the $<0,05$ score, which shows that all of the hypotheses reviewed are well-accepted by using both OLS regression and the 50-quantile regression. Even though the value of R square shows that the model with OLS regression provides a better result, it does not mean that it is the standard because the data is not fulfilling the assumption normality and heteroscedasticity tests. The research results are under the previous research mentioning that the quantile regression can provide a better model for the data whose heteroscedasticity and indicates outlier inside of it (Koenker, 2004; Koenker, 2011; Kong & Xia, 2012; Abramo et al., 2012; Widodo & Andani, 2016; Hapsery, 2017). Moreover, This research indicates that the theory that states quantile regression provides a better model for data that has problems with the assumption test and indicates outliers are actual.

Research identifying a quantitative regression model with the fixed effect proposes a simple transformation from the data abolishing the fixed effect with the assumption that the effects serve as location switches (Canay, 2011). The latest – entirely – adaptive method to heteroscedasticity combines the conformal prediction with the classic quantitative regression inheriting the profits from both methods. The efficiency comparison of quantitative and other conformal methods show that the methods tend to produce shorter interval (Romano et al., 2019; Deaner, 2019). Regression tends to provide an incomplete description. At the same time, the mean also provides an incomplete description for the single distribution, and so does the regression curve for one distribution set. Moreover, the quantitative regression gradually develops into comprehensive strategies to complete the regression description (Garson, 2016). Likewise, data that has problems with the assumption test, either normality or heteroscedasticity, can still be processed using quantile regression.

CONCLUSION

All of the research groups of accounting lecturers in Indonesia indicated similar results where positive influence between the number of Scopus documents towards the number of citations and H index in the Scopus occur. Moreover, it indicates that the more articles published in the Scopus database, the number of citations and H Index will also increase. Both public and private university management need to understand this matter to motivate their lecturers to increase the number of their publications. The most effective strategy is providing performance bonuses for the published articles in the Scopus database. Public universities tend to show a better research performance than private universities due to the available budget support from the central government to support the research itself and the remuneration scheme as a part of the research performance bonus for the lecturers.

Furthermore, this research has accepted all of the proposed hypotheses, including the comparison model between the OLS regression and quantile 50 that are theoretically, quantile regression is more applicable to form the research model, particularly on the heteroscedasticity data. The results of the statistic instrument are highly dependent on the inputted data characteristic. Quantile regression is an appropriate solution for the specific data that do not meet the classic assumption tests and have an outlier.

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This research contributes to the implications for the universities to encourage research performance since it can serve as a consideration in budgeting from government funds. Other than being influenced by the number of the Scopus document seen from the number of the citation and H Index, the research performance is also influenced by other things such as the collaboration with foreign authors.

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