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Individual Determinants of Faculty Publication at Four Public Universities in Southern Sumatera

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Abstract

An important function of universities is to produce published knowledge. Research in university is one indicator of publication productivity and university contribution to society. Academic productivity in publication is a lecturer special reputation, so academic promotion is also measured through number of publications. There are some individual determinants that affect publication productivity. The purpose of this article is to determine the effect of individual determinants on the number of publications produced by lecturers from four state universities in Southern Sumatra. The result shows that there are an increasing number of publications as 3.433 times if income increased 100 percent. However, it is opposite on age effects. There are significant differences in number of publications based on educational qualification, academic rank and discipline. The publication numbers from doctoral academics and science disciplines have more one article than non-doctorate academics and social discipline. If ranked by academic rank, assistant professor, associate professor and professor have more 2-3 articles publications than expert assistant. This research concludes that income is the most powerful determinant affecting the number of publications, while seniority has no significant and positive effect on number of publications.

Keywords: Age; Discipline; Education; Gender; Publication; Rank; Salary.

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1. Introduction

Scientific publication is an important agenda for Academics, it is not only a prerequisite but also a future for Indonesia. With publications, research results can be communicated to a wider audience, and will give wider benefit. In global competition, it also has been a shift from natural resources based turned into a science-based. Universities in Indonesia play an important role in determining the competitiveness of Indonesia. Qualified university is marked by high-quality research, lot of publications, and high productivity professor in publication. Productivity of academics in publication is a special reputation owned academics, so the academic promotion is also measured through number of their publications.

Productivity of publication is influenced by many determinants that can be grouped in two parts, namely individual characteristics and work environment. Moreover, productivity of research is influenced by individual characteristics such as age, gender, academic rank, tenure and educational experience. It is found in academic rank that assistance and associate professor has less number of publication than a professor. Moreover, academic publications of PhD educated has more than non-PhD educated. He also found that publication is affected by disciplines, namely business studies, engineering and natural sciences had more publications than humanities. Lastly, long years after completing education have a negative effect on publication.

Meanwhile, there is a quadratic relationship between the ages of male academics on productivity of publications, as well as increasing trend of academics who study abroad. Moreover the legislative establishment of private universities encourage an increase in number of publications, however, the academics that works at the same university to study has a negative effect on publication [2]. When the productivity of publication is connected with gender and number of children, it obtained a positive influence on the number of children to the publication that means the more children the more publicity. It is also found that female academics produce fewer publications than male academics [3,4].

There is effect in different direction on earnings changes as response to number of publications. According to the authors in references [5, 6, 7], when respondents increase the number of publication, it implies that respondents must pay the publication fee of articles, but it is contrary to the findings of authors in reference [8, 9, 10]. If it is observed from seniority, senior academics is lack of concentration on the number of research but more attention on other things in university. Most publications derived from ideas and methodologies developed at the beginning of one's career, but as the passage of time these ideas become obsolete. For example, a senior professor is more likely to slide into teaching and administration activity because they are free from the pressure of promotion. It is more reflective but less publication productivity [1].

Thus, it has been found by some authors that the publication of academics is influenced by many variables, including individual characteristics, such as age [2, 11, 12, 13, 14, 15]; Gender [3, 4, 16, 17, 18, 19, 20, 21, 22, 11, 15, 23]; Academic Ranking [1, 11, 24, 15, 25, 26]. Therefore, this paper aims to investigate the influence of individual determinants such as age, seniority, discipline, gender, academic rank, education and income on publication.

2. Material and Method

2.1. Location and Design Research

This type of research is survey analytic with cross sectional study design. This study was to determine the effect of Age, Discipline, Gender, Rank, Salary, Education, Seniority to number of Faculty Publication at the Four Universities in Southern Sumatera.

2.2. Population and Sample

The population in this study is 3740 lecturers that is total number of faculty members in four public universities in Southern Sumatra which are Sriwijaya University, University of Lampung, Jambi University and Bengkulu University. The number of population of the four university lecturers is 25 percent of the total number of lecturers of State University in Indonesia (PDPT Higher Education, 2013) and it also included in 100 universities in Indonesia version *Webometrics Ranking of World Universities*.

Using proportional stratified, sample size used was 348 lecturers consisted of 16 lecturers with academic rank of Professor, while the number of sample with academic rank Associate Professor, Assistant Professor and Expert Assistant are 114, 120 and 98 lecturers respectively. The sample consisted of 208 male and 140 female and it has 194 samples from science discipline and 154 sample social sciences disciplines.

2.3. Method of Data Collecting

The primary data obtained through interviews using a list of questions and the secondary data collected from Higher Education Data Base in 2013.

2.4. Data Analysis

The statistical analysis was using SPSS statistical software version 17 with a significance level of $p < 0.05$. Data presented in frequency distribution table and cross tabulation accompanied by a description to explain the research results and discussion. A model analysis was used to determine the impact of individual determinants on the number of academic publications that expressed in multiple regression equation as follows:

$$\text{Pubs} = b_0 + b_1W + b_2S + b_3U + b_4D_1P + b_5D_2R + b_6D_3G + b_7D_4D + e(1)$$

Pubs is number of publications were calculated from the number of articles published; W is revenue per year; S is seniority or long years of academics have been working at the university; U is age of academics, P is education (Doctorate = 1; 0 otherwise); R is academic rank, (expert assistant = 0; assistant professor = 1; associate professor = 1 and professor = 1); G is gender of academics (male = 1; 0 otherwise); D is discipline (science = 1; otherwise=0); e is the error term.

3.1. Descriptive Analysis

Table 1: Mean and standard deviation value of variables

Variables	Mean	Standard Deviation
Publication	4.51	3.62
Salary (million rupiahs)	102.19	50.25
Seniority (years)	17.13	9.33
Age (years)	44.49	9.98

Based on Table 1, the overall average number of publications of academics was four (4) articles in three years, earned 102.19 million per year, the seniority at the universities was 17.13 years and the average age of academics is 44, 49 years. Figure 1 below shows that the distribution of respondents by the number of publications produced in the last 3 years with the range of the number of publications 0-5 pieces. The most widely distributed academics frequency is 70.1 percent and it also shows that in all the universities there are academics who have publications more than 3 pieces per year although it is less than 5 percent.

The highest number of publications is 94.67 percent owned by academics that have earnings between 30 to 149.99 million per year that is at intervals of publication of academics aged 24-63 years. However academics aged 34-43 years (29.1 percent) are group of academics that generate the most publicity of 0 -5 publications. Moreover, the percentage of professor academic rank who have number of publications in that interval was only 2.9 percent which is still far less than assistant professor which is 32.4 percent and associate professor of 32.8 percent.

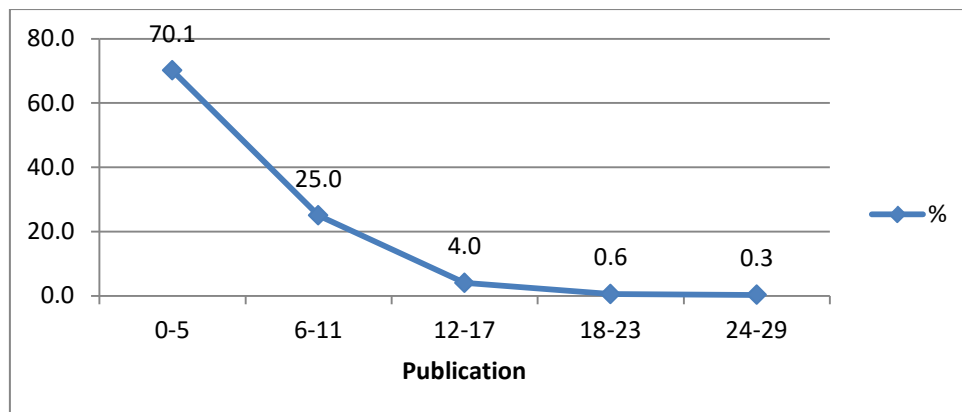


Figure 1: Distribution of Academics by Average Number of Publications

According to discipline, number of publications between 0-5 pieces that is produced by science academics is 51.6 percent and 48.4 percent from other disciplines. However, if observed by education, number of the publications is three-quarters resulted of non-doctor educated academics. It also occurs for publication with interval at 6-11 pieces that still less number of doctor publication than non-doctor educated publications. It means that the productivity of doctor publications at four universities in this study is still low.

If distribution of academics income observed in total as shown in Fig. 2, it can be explained that most academics income are in interval from 90 to 149.99 million per year, followed by lower earnings at an interval from 30 to 89.99 million per year. Both intervals cover a very large distribution 49.43 percent and 42.24 percent respectively. The overall percentage is 91.67 percent of academics have income from 30 to 149.99 million per year.

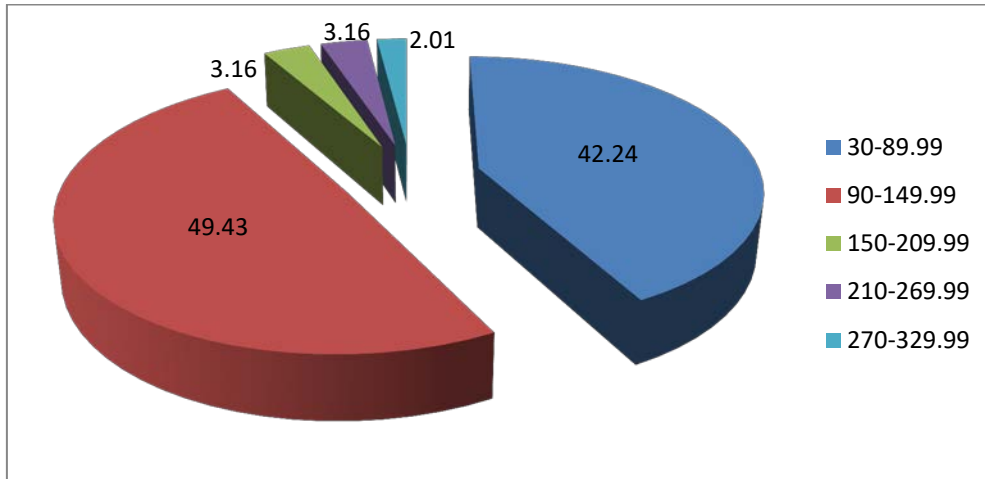


Figure 2: Distribution of Academics by Income

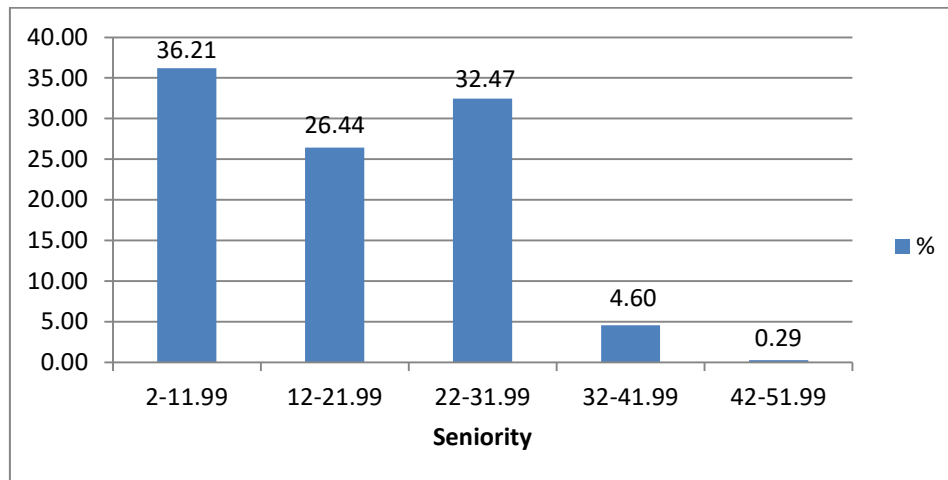


Figure 3: Distribution of Academics by Seniority

Based on Fig. 3, it shows that number of lecturers who have seniority from 2 to 11.99 years and 22 to 31.99 years is the most widely spread by 36.21 percent and 32.47 percent respectively. Overall, the seniority of lecturers based on results of this study indicates range from 2 years to 43 years with an average of 17.13 years. It can be concluded that 46 percent of academics have seniority above average.

The results as shown in Table 2, academics age is very varied from 24 years to 68 years with average age is 44.49 years. It also shown that the dominant age of academics are 34-43 years by 30,7 percent and it followed

by age group of 44-53 years by 27.3 percent. Two other age groups are 24-33 years age group by 18.4 percent and 54-63 years age group by 21.3 percent. Table 2 also shows that nearly half of academics which is 49.1 percent have a lifespan under average age of academics, so the rest is academics older than 44 years.

Table 2: Distribution of Academics by Age

Age	Frequency	Percentage
24 – 33	64	18,4
34 – 43	107	30,7
44 – 53	95	27,3
54 – 63	74	21,3
64 - 68	8	2,3
Jumlah	348	100,00

Based on Fig. 4, it shows that if the respondents were categorized by education level, there are 69.25 percent of respondents are non-doctoral education (S2) and 30.75 percent have a doctoral education (S3). Thus the non-degree-educated respondents are as much as twice of number of doctoral lectures. It seems that academics at four state universities in Southern Sumatra was still have great opportunities to increase their education when viewed from age distribution which is 76.4 percent.

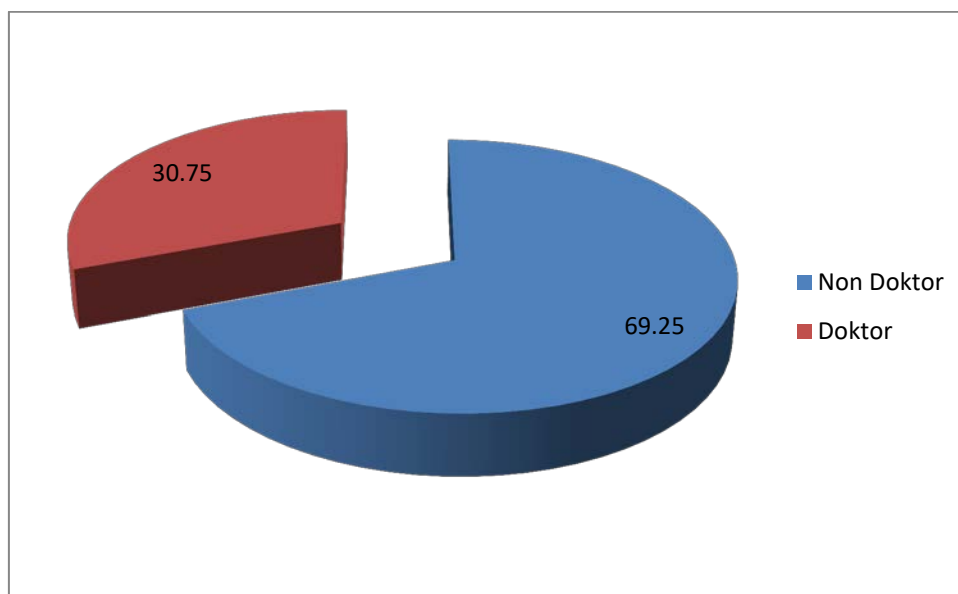


Figure 4: Distribution of Academics by Education

3.2. Regression Analysis

Table 3: Regression Result

Equation Name	Variable	EstimationParameter	Probability	Significance level	
PUBS	Constanta	2.306	0,000	1	
	Salary (W)	0.022	0,001	1	
	Seniority (S)	0.022	0,676		
	Age (A)	-0,170	0,001	1	
	Di Ph.D	1.352	0,001	1	
	DiJAL	1.793	0,000	1	
	DiJALK	2,211	0,001	1	
	DiJAProf	3.096	0,026	1	
	DiG	0,579	0,120		
	DiD	1.009	0,006	1	
R² = 0,450		F-statistic	9.531	DW-statistic	1,712

Note: at level significance: 1, different at level significance (α) 0.05

Based on Table 3, the multiple regression equation to this publication model as follows:

$$Pubs = 2,306 + 0,022W + 0,022S - 0,170A + 1,352 D_1Ph.D + 1,793D_2JAL + 2,211D_3JALK + 3,096D_4JAProf + 0,579D_5G + 1,009D_6D + e$$

Variations of earnings, seniority, age, education, academic rank, gender and academic disciplines can explain 45 percent of the number of academic publications. All independent variables were also significantly affect simultaneously number of publications (F statistic = 9.531; probability F = 0.000). The regression model is also free from violation of classical assumptions: multi collinearity (partial correlation between independent variables <0.8, except for age and seniority); autocorrelation (DW statistic = 1.712) and heteroscedasticity (does

not form a specific pattern on a residual). Partial effect_{also} shows that almost all variables are significant at 0.05 level. In can be concluded that model can be analyzed further.

4. Discussion

Based on the estimation, the most powerful determinant affecting number of publications statistically significant is revenue. The magnitude of income elasticity on number of publications is 0.498, it implies that if earnings increased 100 percent, number of publications will increase 49.8 percent. If earnings increased, lecturers can be more focused on improving its reputation by increasing publication productivity without to looking for other income sources. If earnings increase, it means greater chance not to feel burdened by article publish fee. Thus, the increasing of earnings will increase number of publications. In addition, the higher income of lecturers will build habit higher education to uphold academic values. More academics will measure the success by developing research published.

No significant effect on seniority variables can be explained as senior lecturer lack of concentration on research but more attention on other things at university. Most publications derived from ideas and methodologies developed at beginning of one's career. By the passage of time these ideas become obsolete. Thus the longer an academic in university, publications is not an important thing in his career. Even number of senior academic publication increases; it is not as main author.

There are differences in number of publications by gender where the coefficients of gender showed that male lecturers have more publications than female lecturers, although it is not significant because responsibility to produce publication without looking at gender differences. This is in line as found by [4, 11, 16-23, 26].

Other result of variables showed statistically significant in the estimation equation. The positive algebra sign of dummy coefficient of education, rank and discipline means that number of lecturer publications with doctorate greater than non-doctorates, publications academics from disciplines of science more than social academics and academic publications of assistance professor, associate professor and professor more than expert assistant academics. The number of doctor publications is 1,352 articles more than non-doctor colleagues; academic science publications is 2.48 articles more social or humanities publications. The academics that have academic rank more than expert assistants have more number of publications which are 1,793 articles (assistant professor); 2.211 articles (associate professor) and 3.096 articles (professor).

Regarding the coefficient on dummy variables, it can be explained that the average number of doctor academic publications is 3.658 articles in 3 years; male academics of 2,885 articles; science academics of 3,315 articles; assistant professor of 4,099 articles; associate professor of 4.517 articles and professor of 5,402 articles. In average number of academic publications is in ranges from 3 to 5 articles, or no more than two articles each year.

Meanwhile, age of academics does not show in line with the increase in number of academic publications. The reversal effect of age on number of publications imply that older academics is free from the promotion pressure is more likely to slide to teaching and administration activity, which is more reflective but less produce

publications. The opposite was obtained in the study in reference [11, 24, 25, and 26].

5. Conclusion

The average number of academic publications at four state universities in South Sumatera is 4.51 articles in 3 years. It includes 70.10 percent of the academics surveyed. Income is the greatest determinant effect on number of publications, where the magnitude of the number of publication increase is half of the amount income increase.

The differences in number of publications occurred in academics as categorized by education, academic rank, gender and discipline. The academics with doctor educated, male gender, science discipline with academic rank assistant professor, associate professor or professor has a number of publications more than others.

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